2008 U.S. S.Ct. Briefs LEXIS 9952

Supreme Court, U.S.
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Nos. 07-1601 & 07-1607

In the Supreme Court of the United States

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY AND UNION PACIFIC RAILROAD COMPANY,
PETITIONERS,
V.
UNITED STATES OF AMERICA, ET AL.,
RESPONDENTS.

SHELL OIL COMPANY,
PETITIONER,
V.
UNITED STATES OF AMERICA, ET AL.,
RESPONDENTS.

ON WRITS OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

JOINT APPENDIX

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Trial Exhibit 63, Summary of Shell Invoices to B&B JA-412

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Trial Exhibit 1087, D-D® Fumigant Inspection Summary – Brown & Bryant (excerpts) (US ER 985-86) JA-505

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July 1999 Railroads' Proposed Findings of Fact (excerpts) JA-606

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ITEMS PREVIOUSLY REPRODUCED

In accordance with Supreme Court Rule 26.1, the following items have been omitted in printing this joint appendix because they appear on the following pages of the Appendices to Petitions for Writ of Certiorari filed on June 23, 2008 by Petitioners in Case No. 07-1601 and Case No. 07-1607.

United States v. Burlington Northern & Santa Fe Railway Co.,
520 F.3d 918 (9th Cir.
Mar. 25, 2008).....07-1601 at 1a; 07-1607 at 1a

United States v. Atchison, Topeka & Santa Fe Railway Co.,
Nos. CV-F-92-5068 OWW, CV-F-96-6226 OWW, CV-F-96-6228 OWW,
2003 WL 25518047 (E.D. Cal.
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United States v. Burlington Northern & Santa Fe Railway Co.,
502 F.3d 781 (9th Cir.
Sept. 4, 2007).....07-1601 at 263a

42 U.S.C. § 9601(1)–(20)(a).....07-1601 at 311a

42 U.S.C. § 9607(a) .....07-1601 at 317a; 07-1607 at 266a

RELEVANT DOCKET ENTRIES

U.S. Court of Appeals for the Ninth Circuit
Case No. 03-17125

Date Filed	#	Docket Text
		* * *
02/17/2004	9	Filed certificate of record on appeal
		* * *
11/23/2004	24	Filed USA's first brief on cross-appeal, and excerpts of records in 4 vols.
11/23/2004	25	Filed DTSC, California's first brief on cross-appeal
		* * *
02/17/2005	31	Filed Burlington Northern and Union Pacific Transp's second brief on cross-appeal and excerpts of record in 2 vols
		* * *
02/17/2005	33	Filed Burlington Northern and Union Pacific Transp motion to take judicial notice of EPA order
		* * *
03/18/2005	42	Filed Shell Oil Company's second brief on cross-appeal and suppl excerpts of record in 2 vols
		* * *

04/21/2005	43	Filed USA's third brief on cross-appeal and suppl excerpts of record in 1 vol
04/21/2005	45	Filed DTSC, California's third brief on cross-appeal and copies of record
		* * *
07/11/2005	68	Filed Shell Oil Company's reply brief
		* * *
08/04/2005	71	Filed certified record on appeal
		* * *
09/07/2005	75	Filed appellee Burlington Northern and Union Pacific Transp's 38 pages brief
		* * *
09/12/2005	77	Argued and submitted to Betty B. Fletcher, John R. Gibson, Marsha S. Berzon
		* * *
03/16/2007	87	Filed opinion: affirmed in part, reversed in part. Filed and entered judgment.
		* * *
05/07/2007	99	Filed Appellee Shell Oil Company petition for panel rehearing and petition for rehearing en banc
05/07/2007	101	Filed Appellee Burlington

		Northern, Appellee Union Pacific Transp petition for panel rehearing and petition for rehearing en banc
		* * *
07/30/2007	109	Filed DTSC, California's response to petition opposing petitions for en banc rehearing
07/30/2007	111	Filed Appellant USA's response to petition opposing petitions for en banc rehearing
09/04/2007	113	Filed order and amended opinion
		* * *
03/25/2008	125	Filed order and amended opinion. Denying Petitions for rehearing and en banc rehearing; (Judge Bea dissents from order denying petition for rehearing en banc)
		* * *
04/03/2008	128	Filed order. The unopposed motions to stay the mandate filed by Shell and by the Railroads are granted.
		* * *

U.S. Court of Appeals for the Ninth Circuit
Case No. 03-17153

Date Filed	#	Docket Text
		* * *
02/17/2004	9	Filed certificate of record on appeal
		* * *
11/23/2004	19	Filed USA's first brief on cross-appeal, and 5 excerpts of record in 4 vols.
11/23/2004	20	Filed DTSC, California's first brief on cross-appeal
		* * *
02/17/2005	24	Filed Burlington Northern and Union Pacific Transp's second brief on cross-appeal and excerpts of record in 2 vols
		* * *
02/17/2005	26	Filed Burlington Northern and Union Pacific Transp motion to take judicial notice of EPA order
		* * *
03/18/2005	33	Filed Shell Oil Company's second brief on cross-appeal and suppl excerpts of record in 2 vols
		* * *
04/21/2005	34	Filed USA's third brief on cross-appeal and suppl excerpts of

record in 1 vol

* * *

04/21/2005	36	Filed DTSC; California third brief on cross-appeal and copies of record

* * *

07/11/2005	54	Filed Shell Oil Company's reply brief

* * *

09/07/2005	59	Filed appellee Burlington Northern and Union Pacific Transp's brief

* * *

09/12/2005	61	Argued and submitted to Betty B. Fletcher, John R. Gibson, Marsha S. Berzon

* * *

03/16/2007	71	Filed opinion: affirmed in part, reversed in part. Filed and entered judgment. [03-17125, 03-17153, 03-17169]

* * *

05/07/2007	78	Filed Appellee Shell Oil Company petition for panel rehearing and petition for rehearing en banc
05/07/2007	79	Filed Appellee Burlington Northern, Appellee Union Pacific Transp petition for panel

		rehearing and petition for rehearing en banc
		* * *
07/30/2007	86	Filed Appellant DTSC, California's response to petition opposing petitions for en banc rehearing
07/30/2007	87	Filed Appellant USA's response to petition opposing petitions for en banc rehearing
09/04/2007	88	Filed order and amended opinion
		* * *
03/25/2008	94	Filed order and amended opinion. denying petitions for rehearing and en banc rehearing
		* * *
04/03/2008	97	Filed order. The unopposed motions to stay the mandate filed by Shell and by the Railroads are granted.
		* * *

U.S. Court of Appeals for the Ninth Circuit
Case No. 03-17169

Date Filed	#	Docket Text
		* * *
02/17/2004	7	Filed certificate of record on appeal
		* * *
11/23/2004	17	Filed USA's first brief on cross-appeal and excerpts of record in 4 vols
11/23/2004	18	Filed DTSC, California's first brief on cross-appeal
		* * *
02/17/2005	22	Filed Burlington Northern and Union Pacific Transp's second brief on cross-appeal and excerpts of record in 2 vols
		* * *
02/17/2005	24	Filed Burlington Northern and Union Pacific Transp motion to take judicial notice of EPA order
		* * *
03/18/2005	31	Filed Shell Oil Company's second brief on cross-appeal and suppl excerpts of record in 2 vols
		* * *
04/21/2005	32	Filed USA's third brief on cross-appeal and suppl excerpts of

		record in 1 vol
04/21/2005	34	Filed DTSC, California's third brief on cross-appeal and copies of record
		* * *
07/11/2005	52	Filed Shell Oil Company's reply brief
		* * *
09/07/2005	57	Filed appellee Burlington Northern and Union Pacific Transp's brief
		* * *
09/12/2005	59	Argued and submitted to Betty B. Fletcher, John R. Gibson, Marsha S. Berzon
		* * *
03/16/2007	69	Filed opinion: affirmed in part, reversed in part; filed and entered judgment.
		* * *
05/07/2007	76	Filed Appellee Shell Oil Company petition for panel rehearing and petition for rehearing en banc
05/07/2007	77	Filed Appellee Burlington Northern, Appellee Union Pacific Transp petition for panel rehearing and petition for rehearing en banc

* * *

07/30/2007	84	Filed Appellant DTSC, California's response to petition opposing petitions for en banc rehearing
07/30/2007	85	Filed Appellant USA's response to petition opposing petitions for en banc rehearing
09/04/2007	86	Filed order and amended opinion

* * *

03/25/2008	92	Filed order and amended opinion. Denying Petitions for rehearing and en banc rehearing (Judge Bea Dissents from Order denying Petition for rehearing en banc)

* * *

04/03/2008	95	Filed order. The unopposed motions to stay the mandate filed by Shell and by the Railroads are granted.

* * *

RELEVANT DOCKET ENTRIES

U.S. District Court for the Eastern District of California
Case No. 1:92-cv-05068-OWW-DLB

Date Filed	#	Docket Text
		* * *
12/09/1992	20	First amended complaint filed
		* * *
03/05/1993	31	Answer to 1st amended complaint and counterclaim by defendants Fred R Bryant, Ed A Brown, John H Brown, Brown & Bryant, Brown & Bryant Inc, Vernon A Wilson against plaintiffs Southern Pacific, Atchison Topeka
		* * *
05/24/1995	513	Motion for partial summary judgment on the issue of joint and several liability at Arvin by Plaintiff's Atchinson Topeka and Southern Pacific
05/24/1995	514	Memorandum of points and authorities by plaintiff Atchison Topeka and Southern Pacific in support of motion for partial summary judgment on the issue of joint and several liability at the Arvin Site
		* * *

05/24/1995	523	Declaration of Thomas W Kalinowski in support of motions for partial summary judgment
		* * *
07/17/1995	575	Counter-motions for summary adjudication of claims, and for partial summary judgment re: Railroad's liability at Arvin by deft, cntdft, cntclmt etc Brown & Bryant, J Brown, E. Brown, V. Wilson and M.J. Dupas
		* * *
07/17/1995	578	Memorandum of points and authorities by counter-defendant Brown & Bryant Inc., et al in support of counter-motion for summary adjudication of claims and for partial summary judgment re: Railroad's liability at Arvin
		* * *
09/11/1995	685	Supplemental declaration of Dr Thomas W. Kalinowski in reply to Brown & Bryant's joint opposition to railroad's motion for partial summary judgment re: non-liability and joint and several liability at Arvin
		* * *
11/15/1995	713	Memorandum opinion by Judge Oliver W. Wanger granting in

		part and denying in part cross-motions for summary judgment on the issue of joint and several liability at Arvin by Plaintiff's Atchinson Topeka and Southern Pacific
		* * *
01/09/1997	846	Order by Judge Wanger reassigning cases and relating case(s) 1:92-cv-5068 with member cases 1:96-cv-5879, 1:96-cv-6226, 1:96-cv-6228
		* * *
06/16/1998	933	Motion for summary judgment filed by Pltf USA
06/16/1998	934	Memorandum of points and authorities in support of motion for summary judgment against The Atchison Topeka and Santa Fe Railway Co and the Southern Pacific Transportation Co
		* * *
07/06/1998	965	Memorandum by plaintiff in 1:92-cv-05068 in opposition to motion for summary judgment
		* * *
07/12/1998	969	Memorandum of points and authorities by Dept Toxic Substance in 1:92-cv-05068 in support of motion for summary judgment against the Atchison,

		Topeka and Santa Fe Railway Company and the Southern Pacific Transportation Company
07/17/1998	970	Amended notice of motion and motion (terminating original motion 933) for summary judgment by Dept Toxic Substance in 1:92-cv-05068
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08/12/1998	985	Motion for partial summary judgment by Dept Toxic Substance against the Atchison, Topeka & Santa Fe Railway Co and Southern Pacific Transportation; memorandum of points and authorities
		* * *
09/01/1998	990	Memorandum in opposition to United States and Department of Toxic Substance's motions for summary judgment by Union Pacific Railrd in 1:92-cv-05068
		* * *
09/01/1998	993	Cross-motion for partial summary judgment by Union Pacific Railrd in 1:92-cv-05068; memorandum in support
		* * *
09/01/1998	999	Declaration of Daniel B Stephens in support of Railroads' cross-

		motion for summary adjudication
09/01/1998	1000	Declaration of Dr. Thomas W Kalinowski in support of Railroads' cross-motion for summary adjudication
		* * *
09/15/1998	1007	Joint reply by pltfs USA and Dept of Toxic Sub in support of motions for summary judgment against the railroads and in opposition to cross-motion for partial summary judgment by Union Pacific Railrd in 1:92-cv-05068
		* * *
09/15/1998	1009	Declaration of John Walton in support of USA's motion for summary judgment
09/15/1998	1010	Declaration of Gary Chirlin in support of USA's motion for summary judgment
		* * *
09/16/1998	1018	Deposition of George Mack taken on the following date(s) 3/12/98
		* * *
09/16/1998	1026	Deposition of John Howard Brown taken on the following date(s) 6/15/98
		* * *

09/21/1998	1031	Reply memorandum by Union Pacific Railrd in 1:92-cv-05068 in support of cross motion for partial summary judgment
		* * *
09/21/1998	1035	Declaration of Daniel B Stephens
		* * *
11/05/1998	1050	Notice of motion and motion for summary judgment by third-party defendant Shell Oil Company
11/05/1998	1051	Memorandum of points and authorities by third-party defendant Shell Oil Company in support of motion for summary judgment
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11/05/1998	1053	Declaration of John A Connor in support of Shell Oil Company's motion for summary judgment
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12/04/1998	1085	Response by plaintiffs Atchison Topeka and Southern Pacific in 1:92-cv-05068 in opposition to motion for summary judgment by third-party defendant Shell Oil Company
12/04/1998	1086	Response by plaintiffs Atchison Topeka and Southern Pacific in 1:92-cv-05068 to Shell's statement

		of undisputed facts in support of motion for summary judgment
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12/08/1998	1090	Notice of motion and cross-motion for partial summary judgment against Shell Oil Company by Dept of Toxic Sub in 1:92-cv-05068
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12/08/1998	1092	Memorandum of points and authorities by Dept of Toxic Sub in 1:92-cv-05068 in support of cross-motion for partial summary judgment against Shell Oil Co
12/08/1998	1092	Memorandum by Dept of Toxic Sub in 1:92-cv-05068 in opposition to Shell Oil Company's motion for summary judgment
		* * *
12/08/1998	1096	Notice of motion and motion for summary judgment against Shell Oil Company by Dept of Toxic Sub in 1:92-cv-05068
		* * *
12/23/1998	1100	Deposition of Patrick J Reeves taken on the following date(s) 12/18/97 with exhibits
12/23/1998	1101	Deposition of Robert Swain taken on the following date(s) 3/17/98

* * *

12/23/1998	1107	Deposition of David Rea taken on the following date(s) 5/2/98
12/23/1998	1108	Deposition of David Rea taken on the following date(s) 7/11/98, volume II

* * *

12/23/1998	1113	Deposition of Richard Woolley taken on the following date(s) 5/27/98

* * *

12/28/1998	1123	Reply by Shell Oil Company to the Railroads' and Governments' opposition to motion for summary judgment by third-party defendant Shell Oil Company

* * *

12/29/1998	1130	Reply by defendant Shell Oil Company to response to motion for summary judgment by third-party defendant Shell Oil Company

* * *

12/29/1998	1133	Response by Shell Oil Company motion for summary judgment against Shell Oil Company by Dept of Toxic Sub in 1:92-cv-05068

* * *

12/29/1998	1138	Response by Shell Oil to the governments and railroads cross motions for summary judgment and reply to the governments and railroads oppositions to Shell Oil Company Oil Company by Dept of Toxic Sub in 1:92-cv-05068
		* * *
01/06/1999	1140	Transcript of 10/26/98 hearing on USA's motion for summary judgment as to ATSF; DOT's motion for partial summary judgment as to ATSF
01/06/1999	1141	Reply in support of cross-motion for summary judgment against Shell Oil Company
		* * *
01/29/1999	1144	Findings and recommendations by Magistrate Judge Dennis L. Beck recommending that Railroads motions be granted; that the Brown & Bryant counterclaim be dismissed with prejudice; that Brown & Bryant parties Answer be stricken; that default judgment be entered against Brown & Bryant parties as to all remaining claims of Railroads against them in this matter
		* * *

02/19/1999	1146	Pretrial statement by USA
		* * *
02/22/1999	1148	Supplement to purported pretrial statement from cross-defendant Shell Oil Company in 1:92-cv-05068
		* * *
03/02/1999	1151	Pre-trial order approved
		* * *
03/16/1999	1175	Trial brief submitted by counter-defendant Southern Pacific in 1:92-cv-05068
		* * *
03/19/1999	1183	Memorandum and Order: by Judge Oliver W. Wanger re cross motions for summary judgment by third-party defendant Shell Oil Company [1050-1] denied with regard to the Arvin Site
		* * *
03/19/1999	1187	Trial brief submitted by third-party defendant Shell Oil Company
03/19/1999	1188	Trial brief submitted by Dept Toxic Substance
		* * *
03/19/1999	1195	Memorandum and Order: by Judge Oliver W. Wanger motions by the governments for summary

		judgment as to liability of the railroads for releases from the Brown and Bryant parcel are denied; the motions by the governments for summary judgment as to response costs from the railroads for releases on the Brown and Bryant property are denied; the railroad's motion for summary judgment that they are not liable for response costs for releases from Brown and Bryant property is denied
		* * *
03/22/1999	1198	Trial brief submitted by Dept Toxic Substance
		* * *
03/25/1999	1200	Supplemental trial brief submitted by Dept Toxic Substance re statement of claim for past response costs
		* * *
04/06/199	1209	Stipluation and order by Judge Wanger re Department of Toxic Substances Control's claim for past response costs
		* * *
04/19/1999	1223	Order by Judge Wanger re cross-motions for summary judgment against Shell Oil Company by Dept of Toxic Sub, motion for

		summary judgment by third-party defendant Shell Oil Company and motion for summary judgment filed by Pltf USA all denied on issue of arranger and operator liability with regard to Arvin site
		* * *
04/23/1999	1228	Motion for judgment on partial findings by third-party dft Shell Oil Company; and memo of points and authorities
		* * *
04/30/1999	1236	Joint response by USA and Dept of Toxic Substances Control to motion for judgment on partial findings by third-party dft Shell Oil Company
04/30/1999	1237	Joinder by Shell Oil Co in the railroads motion to strike the opinion testimony of government witness John Walton
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05/18/1999	1257	Transcript of 3/30/99 hearing on court trial, day 1
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05/18/1999	1259	Transcript of 3/31/99 hearing on court trial, day 2
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05/18/1999	1278	Transcript of 5/4/99 hearing on court trial, day 21
05/18/1999	1279	Transcript of 5/18/99 hearing on court trial, day 22
05/18/1999	1280	Transcript of 5/6/99 hearing on court trial, day 23
05/18/1999	1281	Transcript of 5/7/99 hearing on court trial, day 24
05/18/1999	1282	Transcript of 5/12/99 hearing on court trial, day 25

05/18/1999	1283	Transcript of 5/13/99 hearing on court trial, day 26
05/18/1999	1284	Transcript of 5/14/99 hearing on court trial, day 27
		* * *
05/19/1999	1287	Deposition of William Perkins taken on the following date(s) 5/26/98
		* * *
07/14/1999	1311	Proposed findings of fact Re: Department of Toxic substances control's claim for response costs by claimant Dept Toxic Substance in 1:92-cv-05068
		* * *
07/19/1999	1314	Railroads' proposed Conclusions of law
07/19/1999	1315	Railroads' proposed findings of fact
		* * *
07/19/1999	1317	Proposed findings of fact by Shell Oil Company
07/19/1999	1318	Proposed conclusions of law by Shell Oil Company
07/19/1999	1319	Govt's proposed findings of fact and conclusions of law
08/20/1999	1320	Response by pltfs Atchison

		Topeka Southern Pacific to Shell's Proposed findings of fact and conclusions of law
08/10/1999	1321	Response by pltfs Atchison Topeka Southern Pacific to Govt's proposed findings of fact and conclusion of law
		* * *
08/17/1999	1323	Response by claimant Dept Toxic Substance plaintiff USA to Govt's Shell's proposed findings of facts and conclusions of law
08/17/1999	1324	Response by claimant Dept Toxic Substance, plaintiff USA to Railroad's findings of fact and conclusion of law
08/18/1999	1325	Response by third-party defendant Shell Oil Company to Govt's proposed conclusions of law
08/18/199	1326	Response by third-party defendant Shell Oil Company to Govt's proposed findings of facts
08/18/1999	1327	Response by third-party defendant Shell Oil Company to Railroads' proposed findings of fact
		* * *
10/05/1999	1330	Transcript of 9/28/99 hearing on

		oral argument
		* * *
05/24/2002	1354	Findings of fact and conclusions of law by Judge Oliver W. Wanger; judgment shall be entered in the amount of $702,871.51 plus interest against Atchison Topeka & Santa Fe Railway and the Southern Pacific Transportation Company and in the amount of $468,581.01 plus interest against Shell Oil Company; Declaratory judgment shall be entered in favor of pltfs and against the Railroads and Shell Oil for future response costs at the Site in the percentages of 9% and 6% according to proof; the federal government attorneys shall propose a form of judgment and lodge with the court within five days of the service of these findings
		* * *
06/26/2002		Lodged Judgment on decision by the court by plaintiff
07/09/2002		Lodged proposed order re pltfs claims for interest, attorneys fees, and costs of suit and re: DTSC's response costs by Railroads'
		* * *

07/09/2002		Lodged judgment on decision by the Court by Shell
		* * *
07/10/2002		Lodged judgment on decision by the court
		* * *
07/17/2002	1375	Master exhibit list
		* * *
08/22/2002	1377	Order by Judge Oliver W. Wanger ordering the modification of the findings of fact and conclusions of law to enter judgment for DTSC
		* * *
09/12/2002	1381	Motion to amend the court's findings of fact and conclusions of law by Plaintiff Dept Toxic Substance
09/12/2002	1382	Memorandum of points and authorities by Dept Toxic Substance in support of motion to amend the court's findings of fact and conclusions of law
		* * *
10/25/2002	1388	Railroads' notice of motion and motion to amend the Court's findings of fact and conclusions of law
10/25/2002	1389	Railroads' memorandum of points

		and authorities in support of motion to amend the Court's findings of fact and conclusions of law
		* * *
10/28/2002	1390	Notice of motion and motion to add and amend findings of fact and conclusions of law by third-party defendant Shell
10/28/2002	1391	Memorandum of points and authorities by third-party defendant Shell in support of motion to add and amend findings of fact and conclusions of law
		* * *
11/27/2002	1394	Opposition of defendant and cross-defendant Shell Oil Company to the Govt's motion to amend the court's findings of and conclusions of law
11/27/2002	1395	Partial opposition of Shell to the Railroads' motion to amend
12/02/2002	1396	Railroads' opposition to Government's motion to amend
12/02/2002	1397	Railroads' memorandum in opposition to Shell's motion to add and amend findings of fact and conclusions of law
12/02/2002	1398	Railroads' memorandum of law in

		opposition to Shell's motion to add and amend findings of fact and conclusions of law
12/09/2002	1399	Shell's reply to response to motion to add and amend findings of fact and conclusions of law
12/09/2002	1400	Response by plaintiff Southern Pacific in 1:92-cv-05068 to partial opposition of Shell Oil to Railroad's motion to add and amend findings of fact and conclusions of law
12/09/2002	1401	Railroad's reply by plaintiff Southern Pacific in 1:92-cv-05068 to the govt's opposition to Railroad's motion to amend the court's findings of fact and conclusion of law
12/09/2002	1402	Reply memorandum of law in support of the govt's motion to amend the court's findings of fact and conclusions of law
		* * *
02/11/2003	1410	Supplemental brief of cross-dft Shell Oil Company re motions to amend findings and conclusions
		* * *
02/19/2003	1412	Reply by pltfs Atchison Topeka and Southern Pacific in 1:92-cv-

		05068 regarding Shell Oil Co's supplemental brief re motions to amend findings and conclusions
05/28/2003	1413	Memorandum opinion and order by Judge Oliver W. Wanger re findings of fact, motion to add and amend findings of fact and conclusions of law by third-party defendant Shell Oil Co, motion to amend by dft Railroad granted, motion to amend the court's findings of fact and conclusions of law by Plaintiff Dept Toxic Substance denied
		* * *
06/13/2003	1417	Errata re order on dfts' separate motions to amend the court's findings of fact and conclusions of law
		* * *
07/15/2003	1419	Amended findings of fact and conclusions of law by Judge Oliver W. Wanger
		* * *
09/10/2003	1428	Judgment on decision
		* * *
10/31/2003	1435	Notice of appeal by claimant Dept Toxic Substance
		* * *
11/06/2003	1439	Notice of appeal by plaintiff USA

* * *

11/12/2003	1441	Notice of cross-appeal by dft/cross-appellant Shell

* * *

02/12/2004	1472	Transcript of 1/27/03 hearing on motion to amend findings of fact
02/12/2004	1473	Transcript of 2/3/03 hearing on motion to amend findings of fact

* * *

U.S. District Court for the Eastern District of California
Case No. 1:96-cv-06226-OWW-DLB

Date Filed	#	Docket Text
		* * *
11/07/1996	1	Complaint
11/14/1996	3	Notice by plaintiff Dept Toxic Substance of related case(s) CV F 96 6228; CV F 96 5068
12/09/1996	4	First amended complaint
		* * *
03/20/1997	14	Answer by defendant Southern Pacific to first amended complaint
03/20/1997	15	Crossclaim by defendant Southern Pacific against defendant Shell Oil Company
03/26/1997	16	Answer by defendant Brown and Brynt Inc to first amended complaint
03/26/1997	17	Amended answer to first amended complaint by defendant Brown and Brynt Inc
		* * *
04/16/1997	21	Notice by cross-claimant Southern Pacific in 1:96-cv-06226 of related case(s) 1:96cv6228;

* * *

07/31/1997	31	Answer by defendant Shell Oil Company
07/31/1997	32	Answer to cross-complaint by cross-defendant Shell Oil Company

* * *

U.S. District Court for the Eastern District of California
Case No. 1:96-cv-06228-OWW-DLB

Date Filed	#	Docket Text
		* * *
11/07/1996	1	Complaint
		* * *
03/20/1997	7	Cross-claim by defendant Southern Pacific against defendant Shell Oil Company
03/20/1997	8	Answer by defendant Southern Pacific
		* * *
03/26/1997	10	Amended answer to complaint by defendant Southern Pacific
		* * *
04/16/1997	13	Notice by deft Southern Pacific in 1:96-cv-06228 of related case(s) CV-F-96-6226-OWW-DLB, CV-F-92-5068-OWW-DLB
		* * *
07/31/1997	24	Answer to complaint by Defendant Shell Oil Company
07/31/1997	25	Answer to cross-complaint by cross-defendant Shell Oil Company
		* * *

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	
Plaintiffs,	)	NO. CV-F-92-5068 OWW/DLB
vs.	)	
BROWN &BRYANT, INC., et al.,	)	(CONSOLIDATED ARVIN CASES)
Defendants.	)	
THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL,	)	NO. CV-F-96-5879 OWW (CONSOLIDATED SHAFTER CASES)
Plaintiff,	)	
vs.	)	
THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	
Defendants.	)	

UNITED STATES OF AMERICA,

Plaintiff,

vs.

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,

Defendants.

DEPOSITION OF PATRICK J. REEVES, P.E.

THURSDAY, DECEMBER 18, 1997

9:10 A.M.

* * *

[16]

* * *

Q Well, let me ask you. Was there a typical pattern to your doing this work for Shell at these particular sites?

A Yes.

Q What was that typical pattern?

A Each of the people who supplied bulk, just the bulk storage were given a three-ringed binder or a manual.

And in that manual, it had all of the procedures and more or less criteria for storing their chemical.

This document was prepared by Shell. And in most

cases, we were basically kind of a watchdog for Shell that those people when we would go to these places, this Brown & Bryant, for instance, we would want to know where is that manual, first thing. We would ask who has read it. If they were familiar with it, and if they had any questions.

We would then go out to wherever their storage tank or tanks were. And we would inspect them for the type of material, in other words, whether it was steel or aluminum or fiberglass, whatever kind of material that they were using to store it.

We would be sure that it had the right kinds [17] of valves. And if the storage had a containment facility large enough so that if in a catastrophic event rupture of the storage vessel, that it would be able to be contained within this area.

And we would tell them that it had to be concrete. It had to be impervious material. Asphalt was not approved. But it couldn't be plastic, and it had to be something that could weather.

And we would explain and give them ideas as to what kind of materials could be used. I mean even concrete block needed to be treated because it would go through concrete block.

So that is the kind of thing we did with them. We also looked to see that they had the right kind of breathing apparatus for safety, the right kind of rubber, I don't even remember if rubber gloves, but it was a certain kind of material to protect themselves if they are ever handling this material.

We would also share with them various things we found from other plants where people didn't take the precautions and the kinds of damage that were done to a number of individuals.

So it was an awareness that we were trying to instill with each of the places we went. We were always, I don't want to use the word chaperoned by the local sales [18] representative, and in this case, his name was David Rea, R-e-a, for this area.

And that way, the sales representative would also be trained to know that he was supposed to have read the manual, also, and that he could learn from me the kinds of valving that they needed to have, the kinds of safety equipment, the eyewash facilities, those kinds of things.

And if we saw anything that didn't comply with the Shell manual, we would write them up in a report and say these are the things that you need to do.

And then it was up to the local sales representative to kind of check on them.

Q Now, did you do this same basic pattern, this typical pattern with the two Brown & Bryant sites?

A. Yes.

Q And do you remember visiting those two sites?

A Yes.

Q Do you remember how many sites you went to with David Rea?

A More than two.

Q More than Shafter and Arvin you are saying?

A Yes.

Q Do you remember going with him to any other sites?

* * *

[52]

* * *

A. If there was a hose or a coupling that was located in the yard that they then attached to a truck that was going to come or go, yes, we looked at everything that was associated with that facility.

Q. Did part of what you look at also include how the D-D was cleaned out of tanks?

A. No.

Q. Did you look at what happened to D-D well, let's get to it when we go down the checklist.

What kind of body protection were the Brown & Bryant workers supposed to use when they were transferring D-D in and out of the bulk handling, the bulk storage facility at Brown & Bryant?

A. They had their option in terms of whether they wanted to wear a full slicker suit, an apron or special resistant coveralls.

They all were supposed to have gloves and then they were supposed to have something that would cover their, you know, where a spill might occur.

Q So the front part of their body?

A Yeah.

Q And do you have any specific memory about what [53] you were told was the Brown & Bryant?

A No.

Q Apparel?

Is that "no"?

A "No." Excuse me.

Q So then turning the page to 071468, these were questions about safety equipment that was available in the case of some kind of spill; is that right?

A Yes.

Q Then turning the page to the next page, what

information went into the tankage section right at the top of the form?

A Well, if we would note if there was one or two tanks. There was seldom more thin two tanks. The diameter, the length or the height.

In some cases they were laying. Sometimes they were standing straight up. It varies with the location.

The approximate number of gallons. So we would calculate all of that by measurement as to how. Sometimes they had stamps on them. Sometimes they didn't.

Q And was that just to have the description or did you understand it to have some other purpose for collecting that information?

A Well, no. There is a purpose because we [54] would, further on we would talk about the containment. So we had to calculate the volume for containment.

Q The next section is labeled "Construction."

And what information was important there from the perspective of this inspection?

A Well, we were looking to see if the tank was, the suitable material according to their manual. If it was a polyolefin, a PVC, a rubber tank, a steel tank, whatever it was, we would note that.

And if we could determine what the thickness of it or the rating of it, we would do that.

A lot of times we couldn't, but we would make notes that that might want to be clarified at a later time. But it wasn't part of our scope of work, because you can see from our fees we were only given a very small allocation.

Q Then the next entry is "Location," and there is a schematic there. How did you use that?

A Well, this schematic is so small. We would use it. We would, that is why we needed an additional sheet to show the location, the property lines or walls or things like that. We really didn't use this to speak of.

Q Then the next heading is "Foundation." And what information did you collect for that that had relevance to this inspection? [55]

A Well, we just note if it was on a concrete foundation or if it was on asphalt or if it was horizontal tank and it had concrete piers, we would note the dimensions and the sizes of those piers.

Q And how was it supposed to be? What was the foundation supposed to be?

A Well, it was supposed to be an impervious material so that if it leaked it wasn't going to get into the underground. I don't remember what the, this particular site was.

Q Would gravel or small rock bed have been an appropriate foundation?

A No.

Q When you say "no" and that is because it needed to be impervious?

A Correct.

Q And then there is a section called. "Access."

What was the purpose of that?

A Oh, just to note for the record if they had a—if there were any components on the tank that you couldn't that needed to be maintained or serviced, if there was a fixed stairway up to it or if they used a ladder to put against it or if, some of the tanks were very low to the ground and you could do everything without having to climb onto the tank. [56]

Others had a lot of important things that were going in and out of the roof, for instance, that was way up high. Then you needed the handrail and stuff. Again, this was more or less for safety purposes.

Q Then the next entry is "Spill Containment Provisions."

It has:

"Diking-Height, Dimensions, Tanks with Common Dike."

If they didn't have a dike, you would put an "N" in the brackets?

A Yes.

Q Or in the parentheticals.

Then next it says:

"Controlled run-off to:"

What was that about?

A If these tanks would actually flow into something, we would indicate where they would flow.

Q So if there was no dike or containment, secondary containment, then you would use this "Controlled run-off to:" section to explain where

A Where it was going.

Q where it would go?

A Yeah, where it would go.

Q And then the next entry or the next line says: [57]

"Sewers, ditches and streams protected?"

What did that mean?

A If there was, for instance, a sewer manhole in the yard in some of these cases where they didn't have containment, at that moment in time, if water, I mean water, D-D could actually get to any of these facilities,

then that is not protected.

Q The next entry is "Moisture Control" on Page 071470.

What was the importance of the information that was collected there?

A To be honest with you, I don't recall. But I know that the fumigant, I believe it broke down with time if it didn't have some kind of moisture control device.

So if they didn't have one, we would write them up that they needed to get one. But there were two types. One was, and most of them did have the inert gas device where they would periodically recharge it much like an air conditioning system with freon or something along those lines.

Q And then the next entry is "Emergency relief." What was the information that was important there or why was it important is really my question.

A I don't recall.

Q The next entry says: [58]

"Pressure/vacuum relief (breathing.)"

What did that mean?

A There are times in the day, especially when it gets real hot, real cold and the material can expand and shrink and consolidate.

So that if you had a major temperature change, the moist it would in fact consolidate and you might have a little bit of a vacuum or, vacuum occur in the tank so as to keep the tanks from going out and in. They allow this, an air device that would allow air to either come into the tank or relieve the tank.

Q And then there is, the next entry is "Level indication". What was that about?

A Well, they, we want to know how much fluid is in the tank so they don't overtop it when they are filling it or let it go totally empty.

So there is, we indicate what kind of a and we don't really want them to open up a lid and do as in a gas station where you run this rod in there, because if you pull it out, you are going to get it on your hands and it's going to drip. So we wanted them to have internal measurement devices to know what the level of the fluid is in the tank.

Q Were there certain devices that were even of the kind you are describing that were not approved because [59] they would tend to leak, for instance?

A I don't recall. We usually had site gauges. And if we saw that they were not protected, we would mention that; in other words, a glass site gauge that was out on the edge of the tank that anybody could walk along and break it, we would bring that to their attention.

But I don't remember actually having that to be a problem. We particularly liked the ones where you actually, they are closed off. I can't think of the brand name, but you would open something up and it would come and it would tell you what the level is. And then you shut it off and the fluid drains back into the tank.

Q Then there is an entry called "Grounding."

Was that to reduce static electricity and the chance of a spark?

A Yes.

Q And then "Markings," what were the markings supposed to be?

A All of the tanks were supposed to have the product labeled so that anybody delivering or picking

up would know exactly what it is.

And also if a fire chief was coming on to the site, he would know what is in it. So we would be sure that those placards were on the tank.

The next page starts with: [60]

"Tank filling/emptying Connections (Top or Bottom.)"

What information was important to be put in there and why?

A We were looking, well, they wanted to know if it was off the top or the bottom, again, for the possibility of overtopping.

And also if the valves, if anybody could come along and, you know, if it wasn't a secured, I mean most of these had, you know, big fences around them.

But in some cases where we went to, they were not very well—they weren't very secure. So we want to make sure that they always have a lock so that only the employees would be able to open and close these things and get, have access to them.

Q Then the last entry on that page, well, the next entry says:

"Valves and Packing on Tanks."

What was important to collect there and why?

A. Well, we wanted to be sure that—there are many materials within these that would be corroded by D-D. I mean they are perfectly good for other agricultural chemicals, but D-D was very corrosive to certain types of things. So we verified that that was the right kind of packing material. [61]

And the other thing that we were worried about that they didn't have any kind of dripping or leaking. So we would go exercise where we could see there to

see that there wasn't any dripping going on. There had to be a positive seal.

Q You said you would go exercise. Is that what you said?

A Yeah, see if we could, if they looked to be in operating order. If they weren't hooked up to anything, we couldn't do it. But we always at least, wherever it was, if you had a quick connect or quick disconnect, take it apart and look at it to be sure that it was the right material.

Q Then the next page, 071472, says:

"Transfer Equipment:"

And the first entry after that is:

"Piping, Materials, Joints, Screwed, Welded, Flanged."

What information were you collecting there and why was it important to your inspection?

A We just wanted a record of how the usually it is talking about any pipe that leaves the tank and comes to a little pump.

There is a few quick cases where the tanks were elevated so they didn't even have to have a pump. I [62] mean they could just gravity flow into a truck.

But we were looking to find out, I mean you could they were all legal to have either screwed, welded or flanged, but we just had a record of I don't know why they wanted it, but I didn't take it there was any particular importance, other than they have a record of how it was done.

Q When you were looking at the D-D tank at these facilities where you were conducting these inspections, were you inspecting the plumbing so to speak that got the D-D into the tank as well as the

plumbing that got the D-D out of the tank?

A Correct, yes, we did.

Q The next entry is:

"Sealants/gasket materials:"

What did you need know there and why?

A Just to be sure that they didn't have devices that they were of the approved material, primarily again for these quick connects. You can connect something and as soon as water no D-D flows through it, it's going to be leaking. We wanted to make sure that they knew. We were trying to make these as leakfree as possible.

Q And then there are:

"Hoses, Materials, Used for:" [63]

What information was important for your inspection?

A Well, wc

Q And why?

A We just noted the kind of hose materials, diameters and lengths, make sure they didn't have all kinds of excess links around.

Once the D-D flows through it, if you have all this stuff, 100 feet of hose or something, that you know there is actually material, it doesn't drain out of there.

So that we were just making sure they didn't have a lot of that stuff laying around, because somebody would pick it up later and, you know, how it will dribble out on the ground.

Q And what was the procedure that was recommended by Shell to be followed in that circumstance?

MR. EARLE: Objection, assumes facts not in

evidence.

THE WITNESS: I don't know.

Q BY MR. LASATER: You can go ahead.

A I don't know.

Q From your review of the manual and communication with Shell personnel, what did you understand was Shell's position in that regard?

A I don't remember. [64]

Q Now it says:

"Electrical bonds established."

What is that about?

A I don't remember.

Q And it says:

"Valves easily accessible."

What was that about?

Is that just a physical thing that you could get to them to shut them off?

A Yes.

Q The next line is:

"Valves & packings used in transfer system."

Was this simply to record the information or was there certain kinds of valves and packings that were not suitable for use with D-D?

A Yes, there were certain ones that were not suitable. And we would check to be sure that they were okay.

Q Now, if they weren't suitable in this example, but it probably applies to some of the others, but in some example you found something that wasn't suitable, there are spaces provided for what you found, how would you note that it wasn't suitable?

A Usually in the transmittal in the end, you

know, when we delivered the final report. [65]

Q And "Packing materials," what does that refer to? Is that like valve packing?

A Yes.

Q Now, "Meters descriptions," what were the meters?

A Well, it was usually an in-line device that spun as the fluid flowed through it so that you knew how many gallons was being loaded.

Q And then there is a "Filters description" entry. And what was that about?

A If they had a filter on the transfer equipment or not, we would note what kind it was, same with the strainer. They kind of go hand in hand.

Q Was there supposed to be a filter or a strainer?

A There didn't have to be, but most of the places as I did recall did have either one or the other.

Q In the next page starts with "Hose connections," and then, quote, "Dry," close quote, disconnects description."

And then the next one is "Quick connects description." What were you looking for here?

A Just to determine that they actually had them.

Q Would you describe the difference between a dry disconnect and a quick [66]

A Connect.

Q —and a quick connect?

A I don't recall, but I believe that the dry disconnect is, you had, there would be no fluid in the line. A valve was somewhere I don't recall.

Q Do you remember that there were other kinds of connects or disconnects that were in use but which

were not what Shell wanted to be used?

MR. EARLE: The question is vague and ambiguous and has no reference as to time or place. Are we talking about in general or Shafter or Arvin or

MR. LASATER: I am talking about in this period of time that he was doing these inspections.

THE WITNESS: I don't recall.

Q BY MR. LASATER: The next entry is:

"Pumps, Loading bulk storage, Unloading bulk storage," and so on.

What information was important to collect for this form and why?

A Well, we just noted all of the information about the pump equipment that was being used for this process.

I don't think that we ever really found a problem with the pump. I mean we just want to make sure that it wasn't corroding and it worked for the purpose. [67]

Q And then to the last page of this exhibit, it says, "Truck/Tank Car Station," and then "Hard-stand."

What did that mean?

A What they wanted, what they were looking for is that a truck, where they were putting this material or conveying it to a truck that it had an impervious surface, that it wasn't just being done like you say on the gravel, that in fact they were supposed to be when a truck was alongside the tank or as close to the tank as it could get while it was being transferred, that there actually was a hard stand material which to them means like concrete.

Q Did it need to be impervious or was it some

term that was less than impervious by saying "hard-stand"?

A We interpreted it to be impervious.

Q And then the next entries or the last entries say, "Barricades and warning signs."

What was that about?

A I don't recall the importance of that.

Q Then it says:

"Grounding/bonding cable and clamp."

Was that to reduce static electricity?

A Yes.

Q And then the next is "Spill containment."

That is something that is actually dealt with earlier, isn't it? [68]

A Yes, it is, but I think that this spill, containment pertains to the truck area as opposed to the bulk storage area.

So we wanted it—I mean sometimes the trucks could drive into the area, you know, down into where there was big bulk storage facility. And they would come into a ramp and then be loaded and unloaded and then drive back out. So the truck and the tank storage was all protected.

But in other cases, this is probably one of them, but I can't remember. You know, the tank is sitting throughout and probably not with any containment. And the truck area might be somewhat over here or in a case even if you did have a tank that had containment, but just a paved area side by side that was outside of that diked area, they would say, hey, that needs to be protected also, because the truck can spring a leak, too.

MR. EARLE: Move to strike the witness' answer

after "but in other cases, this is probably one of them, but I can't remember" as speculative, lacking foundation.

Q BY MR. LASATER: Are you doing any work for Shell Oil Company or any of its affiliated companies today?

A Not that I am aware of.

* * *

[103]

Q. Do you recall whether or not you reviewed the entire manual.

A. Yeah, actually I did.

Q. That was your assignment?

A. That was my assignment, before I made a budget up because I knew I was going to have to do it over and over and over. And I didn't want to lose a ton of money.

Q. Was it your understanding that the tank that you were inspecting was to be at the facility was used for the Shell D-D?

In other words, was it your understanding one way or another whether or not the tanks that you were inspecting were used for Shell D-D and other products or was it just Shell D-D?

A. No, only Shell D-D. In other words, I would go to a site and they may have a dozen tanks in the yard, I don't want to look at any other tank other than where they keep D-D. That was my only assignment.

Q. But it was your understanding, though, that the tanks you were inspecting were used to store Shell D-D?

A. Exclusively, yes.

Q. And Mr. Earle asked you about whether or not the Shell manual had as its purpose safety; correct? Do you remember that? **[104]**

A. Yes.

Q. You said yes. Did it also have a component of environmental protection as far as you can recollect?

A. I believe it was, but only as the existing environmental codes that were referenced in the back.

Q. But you didn't prepare the manual?

A. No.

Q. And you didn't have any discussions as far as you can recollect with the person who did prepare the manual?

A. I did not.

Q. So you don't really know what the purpose was of the author of the manual?

A. No.

Q. You jut knew what the manual said and that the company had to comply with it?

A. Right. They said we want you to fill out this checklist and, you know, look for the checklist compliance with our manual.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	No. CV-F-92-5068 OWW/DLB (CONSOLIDATED ARVIN CASES)
Plaintiffs,	)	
-vs-	)	
BROWN & BRYANT, INC., et al.,	)	No. CV-F-96-5879 OWW (Consolidated Shafter Cases)
Defendants.	)	
AND RELATED ACTIONS	)	

THE DEPOSITION OF GEORGE MACK

before the undersigned Certified Shorthand Reporter, taken on behalf of the Plaintiffs, at the Ramada Inn, Ft. Smith, Arkansas, on MARCH 12, 1998, pursuant to Notice and The Federal Rules of Civil Procedure.

* * *

[56]

* * *

Q. Now, just to be clear for the record, from the west sidc by the west side I'm referring to the area on Exhibit 687 which is to the west of grid H, vertical grid line H, west of that to where the fence line is indicated, is that what you understood me to mean by

west side?

A. That's right.

Q. Okay. Did you ever see any chemical spilled over there on the west side while you worked there?

A. Not on the west side. I would say near the 32 [57] tank, the Beebee 32 tank, liquid fertilizer tank, which is the biggest tank in the yard; the southwest, if you want to call it.

* * *

[59]

* * *

Q. Now, back to the west side. You mentioned the UN-32 tank, which is not on the west side, and a leak from it. Were there any leaks, spills, chemical releases over on the west side that you can remember?

A. If I remember right, some of that 32 had veered off in behind the welding shop and had not quite made it in behind the office there on the west side

Q. Is it fair to say that the west side was used for the purposes that you've already testified to; and that other than that, those uses, it wasn't used in ways that would produce spills or leaks?

A. No. No.

Q. That just is not what happened over there; is that right? [60]

A. No. Huh-uh.

Q. And you're saying no, meaning that that's correct?

A. That's correct. As far as I know, the almost four years that I was there, no, there wasn't any tanks, holding tanks of any kind, that I know of, that was over

there in that area that had ruptured or lines had broke or anything of that nature.

* * *

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA

THE ATCHISON,	:	NO. CV-F-92-5068
TOPEKA & SANTA FE	:	OWW/DLB
RAILWAY COMPANY,	:	(CONSOLIDATED
et al.,	:	ARVIN CASES)
	:	
vs.	:	NO. CV-F-96-5879 OWW
	:	(CONSOLIDATED
BROWN &BRYANT,	:	SHAFTER CASES)
INC., et al.,	:	

DEPOSITION OF ROBERT W. SWAIN

March 17, 1998 Houston, Texas

* * *

[104]

series of inspections found that not one of the customers visited had a totally satisfactory spill containment system." So by that, you're saying that the Brown & Bryant Arvin facility did not have a totally satisfactory spill containment system for the bulk D-D storage. Is that correct?

MR. HELDT: Objection to the form of that question.

A I don't think that's what it says. It says they didn't have an adequate or totally satisfactory spill containment system.

Q Okay. Would you then explain to me what that meant?

A Every one of the agricultural chemicals, products, fertilizers, insecticides, pesticides,

everything that they were handling in a liquid form could be inadvertently spilled or discharged onto the ground and could be flushed into, you know off the property, if not contained. In that respect, they were not totally satisfactory. Not by my standards but by the California standards; by the EPA standards. I'm not sure that EPA was in existence then. Anyway, California certainly had some pretty stringent

* * *

[118]

* * *

A I don't really recall the situation at the time. I do know that they were given the D-D safety manual. My guess is that probably, without exception, most of these people did not read and retain and practice all of the suggestions that are in the D-D safety manual and the other codes and regulations that were referred to in the manual. People just don't read all of that stuff. They just go ahead and get the business done. It's not that it wasn't available to them. It's just that they didn't practice it.

Q Okay.

A Most of the people that we visited, it was a pretty competitive business. Most of these people were real entrepreneurs when they came to putting together a facility to provide the products and services that they sold. They didn't always follow the rules. They did the best they could in the cheapest way possible, and those conditions didn't always meet the standards [119] and regulations required. And that's a general statement. I'm not saying that this was true with Brown & Bryant at Arvin, but this is generally true with all the facilities I investigated.

* * *

[128]

* * *

Q Here on Page S003269, it says, in part, "When D-D spillage has been collected as above, proceed to decontaminate contaminated equipment and surfaces as follows," colon.

A Uh-huh.

Q "Wash down affected areas with a detergent solution and rinse with water," period. "Absorb waste water as above or drain it to a sump for future collection and disposal," period, end of quote. Was that your understanding, at least in part—And the paragraph goes on. Did you have that understanding as to that was the way contaminated equipment was to be decontaminated?

A You're referring to equipment?

Q Equipment and surfaces.

A As a part of equipment, it's probably the only way you can really do that surfaces. There's other ways in which that can be handled, such as putting containment facilities, a dike or whatever, around a tank, if that's the area in which they are concerned about spillage, having loading the facilities or transfer facilities, I should say, set on a pad with a sewer system or a sump that will run it to a basin and then get [129] pumped into their holding pond to keep it from running off of the premises. A lot of these facilities, as we noted in the inspection report, is—again, reviewing it, I noticed that the tank was sitting on gravel. A lot of the other facilities that were inspected were sitting on gravel and all this would do is if there was a spill, would allow the D-D to percolate

into the ground. Washing it with detergent wouldn't have helped a bit. So I don't think that in my review of the facilities with Jack Brown, that we said anything about cleaning or following any of these procedures other than the fact that he should follow the D-D safety manuals.

Q Was it your understanding that Brown & Bryant had a sump where D-D rinseate could be collected?

A I don't recall that, but my guess was that they did not, but it was something that they were planning on providing as regard to that footnote on the inspection report, the typed inspection report.

Q Was it your understanding at this time in 1979 that waste waters containing D-D were regularly generated by distributors like Brown & Bryant as a normal course of their operations? [130]

A Waste waters containing D-D Repeat the question, please.

MR. LASATER: Actually, I don't think I can. Will you read it back?

If it doesn't make sense, I'll redo it.

(The record was read by the reporter.)

A I don't recall that. But in the first place, one wouldn't mix water with D-D if there was a way of avoiding it. It's possible that there would be a D-D spill and rain could come around or somebody was washing down the facilities and there happened to be some residual D-D from transferring product from the storage tank into a transport vehicle where there might have been some spillage. That water, with a little D-D that might be in it at Brown & Bryant from, again, reviewing the inspection report 'cause I don't

remember the specifics, probably would have run off the property at the time that I made the visit because I don't recall that they had a collection facility there at the time. Again, I can only surmise that from our discussion following my inspection and the review with Jack Brown, that this is something that he was going to have to put in as required by the Water [131] Quality Board.

Q Now, you indicated that washing down with water would not be—I don't know that that's what you indicated. You indicated that you wouldn't typically put water with D-D if you could avoid it.

A If I—That's correct.

Q Okay.

A I would absorb it using kitty litter or calcium chloride or—There's a lot of things that you can use to absorb hydrocarbons and then pick them up and then you don't have to worry about the contamination so much or at least you're going to grossly indilute it. Just mixing it with water just makes it that much more difficult to handle and dispose of.

Q We've had testimony in this case that Brown & Bryant's procedures were such that they had a two-thousand or a twenty-five-hundred-gallon-tank truck that they would use to transport D-D to the fields to put into a nurse tank. And that at times, they wanted to handle or transport a different liquid in that truck, and they would wash out that truck and put it into a sump that they had on site so that they then could put the [132] other fertilizer or chemical or whatever in there.

A Yeah.

Q Were you ever aware that Brown & Bryant had a procedure like that?

A No.

Q Were you ever aware that that was a kind of procedure that other agricultural chemical facilities that you visited over your career utilized?

A There were all sorts of facilities out there in order to collect spills and what-have-you. By and large, most of the facilities that I visited had no adequate protection with the handling of spills. Most of them just let them percolate in the ground. And that was one of our concerns in this business because most of these were just bare-bones operations and they allowed this to happen. Most of them were in rural areas and after all, it's D-D. What do you do with the product, anyway? You inject it into the soil. That's the commercial use of it. It's to kill nematodes, so why not let it spill on the ground and kill the damn nematodes?

Q Would be very sure there were no nematodes on [133] that site.

A Well, I've heard of people using D-D as a weed killer. Well, let's face it. It's, basically, like diesel oil, anyway, and people used to go along the road and spray diesel oil on there and kill all the weeds. And that was a good way of getting rid of their contaminated D-D. It wasn't recommended by Shell, but then a lot of things that we recommended weren't followed.

Q You were talking about spills and how, in fact, it was your experience that spills were handled. When you were talking about spills, were you including in there that concept that I referred to of washing out one tank truck in order to put a different product in there?

A No. My concern in looking at that facility, primarily, again, in referring back to the inspection report which was I don't know. Where'd it go?

MR. HELDT: Over here, 1030.

THE WITNESS: Yeah, 1030.

A Most of it was to contain spills that occurred either in the transfer of product or the major concern with what happened to the product in the storage container. Some of the things that they **[134]** were doing with their storage container, as you will see by reading the report, that were very potentially hazardous. They had nothing more than a hose going up from the top to the bottom of the tank and if anything happened to that hose, either because it became old and brittle or it was accidentally pulled off of the bottom connection, it would have evacuated the whole tank. The problem there is that that spill—gross spill of D-D, for instance, there was just no way to contain it. It would run off the property and contaminate everything on down.

Q Right.

A That certainly was a concern to us and a concern to them. They needed to do something about it. So we made recommendations as to what they could do and there were many options to that, to put in a different type of level device so that they can determine what the volume was. You certainly don't want them to overfill the tank. The other one was, well, the what if they did, then what do you do about it? Well, we suggested that they put a berm around the tank to contain it so if there was a spill, it would only affect the ground immediately around the tank and wouldn't

* * *

[186]

* * *

Q Do you recollect what was done with respect to catching spills, if any, that were part of the transfer process both in and/or out?

A There's usually very little spill that can occur, but they always do happen. There's a few drips that are lost or whatever. One way of doing it is when the transport vehicle it can be a railcar, it can be a tanker truck or whatever. [187] comes in and he connects his hose from his storage tank to a pump, which then pumps it into the customer's storage tank. Again, liquid won't flow uphill, so you need a pump in the operations. In making this transfer, then, 'cause, usually, a valve on the end of his hose that connects to the valve on your tank, you open up both of them, but there's still a little space in there where product can get trapped. And when you break the connection so that you can move the umbilical cord from the truck and get him going on his way, there's probably a little drop in there. Frequently, it's collected in a little bucket or pan and disposed of, if it's done properly. Most often, though, back in those days, just let it dump on the ground.

* * *

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
AT FRESNO

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.	)	
Plaintiffs,	)	
vs.	)	
	)	Case No.
BROWN & BRYANT, INC., et al.,	)	CV F-92-5068
Defendants.	)	
AND RELATED ACTIONS	)	

DEPOSITION OF

DAVID REA

GLENDALE, CALIFORNIA

SATURDAY, MAY 2, 1998

* * *

[208]

* * *

Q. Do you remember that part of the bulk facilities improvement program was a requirement that there be dry disconnect valves for transfer valves?

A. I do.

Q. And what was your understanding as to what those dry what was entailed in the dry disconnect

valve? [209]

MR. EARLE: The question is ambiguous as phrased.

MR. LASATER: Let me restate the question.

Q. What was your understanding about the requirement for dry disconnect valves?

MR. EARLE: The question is overbroad, calls for a narrative, and it's ambiguous.

If you can tell.

THE WITNESS: He gets the narration version then.

Dry disconnect valves were used to minimize spill or release of product upon hoses being disconnected.

I can't tell you how many grams of product that meant that would be in tolerance. I can't remember that.

I just know I remember that, through the State of California, the regulators were demanding dry disconnect fittings for filling helicopters and fixed wing aircraft to discharging all kinds of products.

BY MR. LASATER:

Q. Do you remember that the bulk [210] facilities improvement programs requirement for dry disconnect valves referred to the disconnect of the hose that went from the tanker truck which delivered the D-D to the customer site from the customers' tank?

A. I do.

Q. Do you remember that the dry disconnect requirement also applied to disconnects when the customer was taking or had taken D-D out of the bulk tank and -- well, when they were disconnecting from having taken out from the D-D tank?

A. Yes, it was.

* * *

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	
Plaintiffs,	)	
vs.	)	CV-F-92-5068 OWW/DLB
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	

DEPOSITION OF WILLIAM PERKINS

BE IT REMEMBERED THAT the deposition of WILLIAM PERKINS was taken on behalf of the Plaintiffs before Jann Nichols, a Notary Public, on Tuesday, May 26, 1998 beginning at the hour of 10:30 a.m. at the Jackson County Airport Authority Building, 3650 Biddle Road, Suite 13, Conference Room C, Medford, Oregon, 97504.

* * *

[12]

* * *

Q. Now, what else was washed into this sump that you've referred to? [13]

A. Well, everything that they ever drained out of

any tank went into it. They didn't spare anything. Nemagun, DD, whatever, it all went in there.

Q. You mentioned Nemagun. What was your involvement with Nemagun?

A. Well, I injected quite a bit of it in the fields for cotton and things like that. It was mainly used on cotton to kill nematode.

Q. And what was the container that the Nemagun come in?

A. If I remember correctly it came in five-gallon containers made out of metal and it was a clear liquid and weighed about three or four times what water would way. Extremely heavy.

Q. And did any of that get washed into the sump?

A. Well, I imagine it did when they washed out the lines that carried it from the pumps to the injectors when we put it in the ground. Now, the containers when they were emptied before they had the landfill out there near Arvin we took them out there and just threw them out and burned them.

Q. Threw them out where?

A. At the dump grounds. Would be west of Arvin about four miles on Way Patch Highway.

Q. And these lines, were these the lines on the [14] tractors that you were driving?

A. Right, they came from the, you know they dripped it into these little injector tubes. They had things that went down into the ground, that it was injected into the ground under pressure, a slight amount of pressure, didn't need much because the stuff was so heavy. Then when we got back there was still some in the lines, so we just flushed it out and it went into the hole, the sump hole.

Q. When you say got back, do you mean get back to the Brown & Bryant Arvin yard?

A. Right, from the farm or wherever we was using the stuff.

Q. When you were driving tractors while working for Brown & Bryant, were those Brown & Bryant tractors?

A. They were leased. Who they leased them from, I don't know. All of their trucks and everything were leased. They had all Dodge trucks and they were all leased. Now, we had Ford tractors, Ford 6000s that we used, and we had some Ford 500s. I believe that was a smaller tractor that we used for putting fertilizer and pesticides and stuff like that out.

Q. So after the tractor was used at the farmer's field, you'd bring it back to the Arvin yard, the Brown & Bryant yard? [15]

A. That's correct.

Q. Do you ever remember DD being do you remember any DD in the Brown & Bryant yard that was in 55-gallon drums?

MR. EARLE: Can I have the reporter read that back?

MR. LASATER: Let me restate it.

Q. (By Mr. Lasater): When you worked at Brown & Bryant did you ever see DD on site in containers, smaller than 55 gallons? Fifty-five gallons or smaller?

A. Well, I saw some stuff like that in 55-gallon drums but I never—I don't recall ever seeing anything in any container any smaller than that. They had so much stuff there that gosh, this has been years. I just can't remember all of the amount of junk they had there.

Q. Was some DD present at the Arvin site in 55-gallon drums

A. I'm just not

Q or do you remember?

A. I'm just not sure. I can't really remember how they brought that stuff in there. It's just they had so much in that warehouse that it was unbelievable. [16] Now, I've never hauled any of it in drums, so I'm not sure.

Q. Okay. How about a product called Telone. Did you ever have anything to do with a product with that name?

A. Well, if I knew what it was used for. Like I say, my memory of those times is

Q. Okay.

A. I was p.o.'d most of the time that I worked there anyway because I had to handle that crap.

Q. Oh, I see.

A. How do you spell that?

Q. Some people called it Telone, T-e-l-

A. - o-n-e?

Q. Yes, Telone.

A. Well, it sounds familiar. It was probably in 5-gallon cans, wasn't it?

Q. I don't know, and it was a product that was similar to DD is my understanding.

A. Well, that must be what—that's what we used on the tractors for injection on cotton and things like that.

Q. Let me ask you, looking at this grid map again which is Exhibit 687 and you see the area to the west of the warehouse, to the west of the vertical line [17]

"H"

A. It says "covered storage"?

Q. Right. The area to the west of that, up and to the rail lines there, do you see where I'm indicating?

A. Yes, I do. That's an H on the grid.

Q. H on the grid. West of that H.

A. It would be H6.

Q. Right. Now, was any of that property out there used? It was it's also shown on this overhead photo which is Exhibit 242.

A. That's the area to the west?

Q. Right, it's the area to the right of the large building in that photo.

A. Yes.

Q. Did while you were there was Brown & Bryant did it use that area at all?

A. No.

* * *

[19]

* * *

Q. Was there equipment stored to the west? [20]

A. No, not when I worked there there wasn't.

Q. So the west of the warehouse and this maintenance building, that was not used?

A. Not when I was there, no.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY,	)	
Plaintiff,	)	
-vs-	)	No. CV-F-96-5879 OWW/DLB
HERCULES, INCORPORATED, et al., Defendants.	)	

DEPOSITION OF RICHARD S. WOOLLEY

Glendale, California May 27, 1998

* * *

[135]

* * *

Q. In the typed-in portion in the lower half of this form, where it says 5000 gallons, D-D, [136] and then there is a letter, and then it says soil fumigant, do you see that?

A. Yes.

Q. And right below it it says less evaporation allowance. Do you see that?

A. Uh-huh.

Q. Do you remember what the evaporation

allowance was?

A. I don't. There was one because it's a volatile material.

Q. And there was an evaporation allowance at the time that you were district manager?

A. As far as I recollect.

Q. What was your understanding of how that allowance operated?

A. I can't tell you the particulars. But being a volatile product, it was it seemed to be a necessary adjustment for the customers.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	NO. CV-F-92-5068 OWW
Plaintiffs,	USA's Motion for Summary Judgment as to ATSF; DOT's Motion for Partial Judgment as to ATSF
vs.	
BROWN & BRYANT, INC., et al.,	
Defendants.	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	

Fresno, California Monday, October 26, 1998

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[87]

* * *

THE COURT: Let's look at divisibility cases that were just cited.

MR. MacAYEAL: Okay.

THE COURT: And let us assume, because this is

my assumption just by looking at the evidence in gross. This less than 10 percent, probably less than 5 percent of anything [88] that has been released on the leased property compared to what has been released on Brown & Bryant's property, owned property, through the years that would contribute to the groundwater problem or the threatened groundwater problem, and so if we are looking at the Restatement, you do not assign at this stage as a matter of law 100 percent joint liability to the railroad.

Mr. MacAYEAL: So we are assuming that only 10 percent came from the railroad parcel.

THE COURT: I think based on what Mr. Brown testified to and knowing what their operations were compared to, in other words, nobody has tried to give us, like gross estimates of how many millions of gallons were stored in containers or stacked in drums or what was spilled and what wasn't spilled, that kind of stuff, but we know on the other property that you have got, basically, a fabricating site where you are mixing, you are crushing, you are basically taking the ingredients of the agricultural commodities, I should say chemicals, and are putting them into package and a form for transportation, some are in bulk, and that obviously is going to be unquantified, but there is a lot more there on property for which Brown I should say for which the railroads under CERCLA don't have liability compared to what is going on on their property that they have contracted to permit Brown & Bryant to conduct its activities.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 1
vs.	)	Testimony of Lonnie Merryman
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Tuesday, March 30, 1999

REPORTER'S PARTIAL TRANSCRIPT
OF PROCEEDINGS

* * *

[8]

MR. MacAYEAL: I will call the witness, your Honor. Your Honor, the government calls Lonnie

Merryman.

LONNIE MERRYMAN,

called as a witness on behalf of the Plaintiffs, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name for the record.

THE WITNESS: Lonnie Dean Merryman. My last name is M-E-R-R-Y-M-A-N.

THE CLERK: Thank you. You may take the witness stand.

THE COURT: You may proceed.

DIRECT EXAMINATION

BY MR. MacAYEAL:

Q. Mr. Merryman, were you ever employed at Brown & Bryant in Arvin?

A. Yes, sir.

Q. When did you start there, roughly?

A. It was either '72 or '73, and I worked until '81.

Q. Were you out there in the yard in Arvin?

A. I worked a little bit in the yard. Mostly I was field service.

Q. Field service?

A. Yes.

Q. Tell us briefly what you do and what field service [9] involved.

A. Field service was as a serviceman, we would salesmen would go out and sell the material and then we had a full service operation. We would go out and mount the tractor, put the equipment on to apply, or whatever, to apply whatever it was they were putting on.

Q. Fumigant or whatever?

A. Fumigants, insecticides, pesticides, whatever.

Q. Are you familiar with the term of a bobtail?

A. Yes.

Q. What is that?

A. Bobtail were the trucks we handled to handle the fertilizer, the fumigant, to haul it from the plant to the field.

Q. Was there a tanker called a nurse tank?

A. Yes, sir. That's what the bobtail carried it in when the salesmen or tanker drivers would take the nurse tank to the field. They would fill the material in it and then we would nurse out of it to either tractor tanks on tractors or pull rigs.

Q. What was the capacity of the nurse tank generally?

A. Field service, it would hold we had two sizes. One was 2,000 gallons; one was 25 or 26 I'm sorry, 2,000 gallons and 25- or 2600 gallons.

Q. That tank would be stationed out at the farmer's field? **[10]**

A. Yes.

Q. Material from that would go into another tank?

A. Yes, sir.

Q. And then to get the material out to that nurse tank, you would use the bobtail?

A. Yes, sir.

Q. What was typically the size of the bobtail in terms of gallons?

A. I believe it would hold 1800 to 2,000. I'm not sure.

THE COURT: There was a tank on the bobtail?

THE WITNESS: It was a 2,000 or 1800 gallon tank

mounted on a two-ton truck.

BY MR. MacAYEAL:

Q. Was it a tank or truck?

A. Yes.

THE COURT: When you say the nurse tank was stationed in the fields, did you move it into the field?

THE WITNESS: Either the serviceman would move it or the tanker driver when he took out the material. Sometimes the servicemen would spot him in the field and call the order in.

THE COURT: Otherwise, where was it kept?

THE WITNESS: Inside the yard at Brown & Bryant.

BY MR. MacAYEAL:

Q. Now, you personally were taking these tanks out there, correct, you were a serviceman? [11]

A. Yes, sir.

Q. And later on, you became the manager?

A. I became the service manager the last year, two years I was there.

Q. Okay. And when did you leave Brown & Bryant?

A. '81.

Q. Did you have occasion to go visit Brown & Bryant after you left their employment?

A. Yes, sir. The company I went to work for, Kisco Sales, K-I-S-C-O Sales, Incorporated, we sell spray and fertilize equipment, and they were one of my customers after I went to work for them.

Q. You would go back to Arvin plant and try and sell the products that Kisco sold?

A. Yes, sir.

Q. To Brown & Bryant?

A. Yes, sir.

Q. Now, could you tell the Court are you familiar with the term "D-D rig"?

A. Yes, sir.

Q. Could you tell the Court what that is?

A. A D-D rig, I presume he's talking about the pull rigs?

Q. Yes, sir.

A. That was a unit that had two wheels on it with a tongue. It had anywhere from 14 to 16 shanks on the back and then it [12] had about a 500-gallon tank that we put the material in. They would pull this apparatus through the field behind the tractor and that would inject the D-D into the ground for fumigation. They call it solid fumigation.

Q. The D-D rig had tines that dug into the ground like a fork?

A. Yes, tines, shanks.

Q. Those had hoses that allowed the fumigant to be sprayed?

A. Yes, sir.

Q. Now, did these D-D rigs you have familiarity, correct?

A. Yes.

Q. You took them out in the field?

A. Yes.

Q. Did these D-D rigs have any filters on them?

A. Yes, sir.

Q. And what was the reason for the filters?

A. To keep any sediment or trash out of the orifices, to keep them from being plugged up.

Sometimes the D-D, or whatever material it was, would have settlements of rust or pieces of hose that came apart. The big filter would catch everything coming out of the tank going to the pump. We had a smaller three-quarter inch filter that came out of the pump going back to a manifold. That manifold would feed however many shanks we had on the back. Each one of those tubes would have a small in-line orifice body with an orifice and a small strainer in it. [13]

Q. Let me go through that again. Now, when the D-D goes out in the field, would there be dust generated when it was being dragged around?

A. Yes, sir.

Q. That was a concern as far as that material getting inside the tank?

A. Right.

Q. When was there a filter on the bottom of the D-D pull rig?

A. Yes, sir.

Q. What was that for, as far as you understood?

A. That was to keep the dust or sediments from the big tank getting through the pumps and plugging the orifice.

Q. That would keep the sediment from going out of the D-D tank into whatever was transferring into the D-D pull rig?

A. Yes, sir.

Q. And then you had another filter on top of the D-D tank?

A. Not on top of the tank. The tank was open. We would fill directly into it and then it would be strained coming out of the D-D tank.

Q. Was there some type of filter before it got to

the tines?

A. Yes, coming out of the pump there was a small three-quarter filter there also.

Q. You had a pump on the D-D rig that got the D-D into the tines? **[14]**

A. Yes, sir.

Q. There was a filter on that pump?

A. Yes, sir.

Q. Down at the bottom of the tines were there filters as well?

A. Yes, sir, and every shank had its own filter.

Q. Okay. Now, before you took the D-D rig out to the field, did you have to make sure it was clean?

A. Right.

Q. And, in other words, if the filter were all clogged up, it would bc would it be difficult to fill the tank?

A. It would be difficult to take material out of the tank.

THE COURT: Did each shank or tine disperse material?

THE WITNESS: Yes, sir.

THE COURT: Thank you.

You may continue.

BY MR. MacAYEAL:

Q. Mr. Merryman, were the D-D rigs typically washed out?

A. Not usually. If it got real bad, full of a lot of sediment or something, we would wash them out. Usually when we finished an application of the job during our busy season, we would move it from one location to another and we just credit what material

was in the tank and charge to the other farmer.

Q. How would you know how much was in there?

A. They had plastic sight gauges or tubes on the end of the tank, hoses, and they were marked and calibrated in gallons and [15] you could check it that way.

Q. If the tank were half full, the sight gauge would read half full?

A. Yes, sir.

Q. And you applied D-D year-round, though, correct?

A. Yes, sir.

Q. And if there was residual material in the D-D rig out at the field that you were not transferring to another job, what would happen with that rig at that point?

A. If there was a small amount, like less than a hundred gallons or so, the servicemen would hook on for it, tow it back into the yard and park it in the lot.

Q. And that would be staged somewhere in the plant?

A. Yes, sir.

Q. Where was that?

A. In the early years, it was on the north end of the warehouse. In the later years, it was on the northwest and the west end of the warehouse.

Q. This is to the west of the warehouse?

A. Yes, sir.

Q. And that was after the fence got taken down in 1975?

A. Whatever year it was, yes, sir.

Q. And so did you have occasion to check out the

D-D rigs before you took it out on the job?

A. Yes, sir. It was easier to check them in the field, to [16] clean the filters and do everything there, but we did check them there.

Q. What happened from time to time when you checked the filter on the bottom of the tank, if anything?

A. In regards to?

Q. Was there any spillage?

A. Yes, sir.

Q. Were there any special nurse tanks that were devoted to D-D?

A. Yes, sir.

Q. How were they different from the other nurse tanks?

A. They had a different type of hose on it to handle the material, they were smaller hose. Other than that, it was the same.

Q. And were these tanks—the D-D tanks were not rinsed for the most part, the pull rigs, rather?

A. The pull rigs were not rinsed.

Q. How about the D-D nurse tanks, were they rinsed from time to time?

A. Whenever they were brought into the yard, if it was going right back out to another D-D job, they would hook onto it and take it back. If it was going to be in the yard for a while, they would clean it up and park it in the lot.

Q. Was there ever occasions you were aware of where not all of them got rinsed out for whatever reason? [17]

A. Yes, sir.

Q. Too many of them lined up?

A. Yes, sir.

Q. And were those staged over on the western side of the plant, west of the warehouse?

A. Usually when the servicemen brought it in, they would park it on the west side. It was easier to unhook.

Q. Was this a situation where you have to check the filters? Do these have filters?

A. Yes, sir.

Q. Was it important to check these filters on the tank as well?

A. If you were going to turn it right around and take it into the field and you decided to use another application, we would clean it there.

Q. There was a filter on the bottom of the tank that you would open up?

A. Yes, sir.

Q. You did it yourself?

A. I have done it myself.

Q. Was there any type of spills you experienced?

A. Yes, sir.

THE COURT: Where was the—you say that each time the rigs were brought in, the nurse tanks, they were checked, the filters were checked. Was that at the Brown & Bryant site [18] or in the field?

THE WITNESS: That was done inside the Brown & Bryant site when we brought them back in.

THE COURT: Even though you wouldn't rinse them, the filters would be checked every time the tank came in?

THE WITNESS: Right. Because you would have

sediment in it. It was easier to do it there than out in the field.

BY MR. MacAYEAL:

Q. If you had a clogged-up filter, would there be problems from having a clogged-up filter?

A. Right. Sometimes you couldn't get any material out of the tank or it would plug up the rest of the rig, so it was easier to take it apart, clean it there where we had hose and different ways of cleaning it or replacing it.

Q. Okay. Now, were any of the Bobtails—let me ask you this.

Do you recall a tank, a big bulk tank that was dedicated to the product D-D?

A. Yes, sir.

Q. All right. Now, do you recall a was there a windstorm or some type of a storm

THE COURT: Can we do this? How big was the tank for D-D only?

THE WITNESS: I'm not sure how many gallons it held. It would hold like two loads or three truckloads, which were [19] usually

THE COURT: A thousand gallons, estimate?

THE WITNESS: No. When they delivered the D-D, I think it was probably I'm speculating, but I think it was probably 4,000 gallons or so. So, in that area.

THE COURT: In your tenure from 72-73 until '81, was there always a D-D bulk tank?

THE WITNESS: No, sir.

THE COURT: So how long was there a D-D bulk tank?

THE WITNESS: Up until when we had the dust storm, it was either '77 or '78, I'm not sure what year it was, but that tank was destroyed.

THE COURT: And your earlier testimony that concerned nurse tanks, pull rigs and Bobtails, we are talking about that equipment being used only for D-D?

THE WITNESS: We had a special number of trailers that we used for just D-D. The Bobtails would be used for all materials.

THE COURT: Other materials as well. And how many units were devoted to D-D only?

THE WITNESS: On the nurse trailers?

THE COURT: Yes.

THE WITNESS: I can't remember the exact number. There was probably ten or so.

THE COURT: And D-D was used, to your understanding, [20] as a soil fumigant?

THE WITNESS: Yes, sir.

THE COURT: You may continue.

BY MR. MacAYEAL:

Q. Now, after that you recall that the D-D tank was damaged in that windstorm?

A. Yes, sir.

Q. That was '77 or '78?

A. Whenever the dust storm was.

Q. Did the plant take, where was there a place that you were aware of where they stored the D-D since they didn't have that tank? Where did they put it?

A. We had some large truck and trailers, a set of doubles, they call them. They were stainless steel tanks. Each tank would hold anywhere from 2300 to

2500 gallons. They were old converted milk trailers and we would use those. We used it—after we lost the big tank, we used it for temporary storage, and they would put those and use it during our busy season.

Q. When you load up the bobtail, it would be loaded up from that double tank, milk tank, is that what you call it, a milk tank?

A. Yes, sir.

Q. It was a stainless steel milk?

A. They were all stainless steel milk trailers that were converted. **[21]**

Q. There were two of them?

A. We had two sets, yes.

Q. And were those stored over on the western side of the warehouse?

A. They would be all over the yard. They would be on the west side, yes.

Q. Those would be used, then, to download into the bobtail?

A. Yes, sir.

Q. And, also, as far as you know, any deliveries coming in would be pumped into that tank?

A. As far as I remember, yes.

Q. Now, let's go back to you were at the plant before the parcel to the west of the warehouse was used?

A. Yes, sir.

Q. And there was a fence running up along the railroad track?

A. Yes, sir.

Q. To the west side of the warehouse?

A. Yes.

Q. And do you recall whether or not that fence was taken down at some point?

A. Yes, sir.

Q. Do you remember the precise year?

A. I couldn't tell you the exact year, no.

Q. Now, after that fence was taken down, was there anything done to that property out to the west of the warehouse as far [22] as grading or anything like that?

A. The first thing we did was remove the railroad spur that was ran alongside the warehouse. After we took the railroad spur out, then it was leveled. We had a drag that we drug around, leveled it out.

Q. Did you oil it?

A. Yes, sir.

Q. All right. Was it a common practice to oil that plant?

A. Yes, sir.

Q. What type of oil was it?

A. It's just regular road oil. They would have a truck come out and they would spray it on the ground.

Q. Did it have any type of hard material on it, like asphalt, or was it

A. No, it was just like road oil.

Q. Okay. And you recall seeing that surface, correct?

A. That's correct.

Q. Throughout the year, would there be vehicles moved on that surface and other material stored out there?

A. Yes, sir.

Q. Now, did you ever recall any types of flaws or

cracks in that surface?

A. Yes, sir.

Q. What did that look like to you?

A. After they would oil it, we would let it sit for a week or [23] two until it pretty well dried or soaked in and then we would move equipment back over and store it there. They would move it with a forklift or one-ton truck and turning the wheels back and forth would always break out new dirt.

Q. You recall seeing that?

A. Yes, sir.

Q. When you did the oiling, would you do one side of the warehouse first and the other side of the warehouse?

A. Yes, sir.

Q. When that happened, what would you do with the material that was, say, on the side that you wanted to oil, what would you do with the things that were stored out there?

A. We would move everything to the other side.

Q. Now, do you recall whether or not that oiled surface on the west side of the warehouse, did that run all the way up let me back up.

Was there a concrete apron to the west of the warehouse?

A. Yes.

Q. Now, do you recall whether or not the oiled surface ran all the way up and touched that surface?

A. No, you couldn't get the truck all the way up there. They didn't spray all the way to it.

Q. And do you recollect whether or not the site was graded in any particular way as far as rainwater

runoff? [24]

A. Everything was sloped to run to the southeast corner of the yard.

Q. There was a pond down there?

A. Yes, sir.

Q. And let mc

MR. MacAYEAL: Your Honor, may I hand the witness a document?

THE COURT: Yes, you may.

BY MR. MacAYEAL:

Q. I hope this shows up, but could you mark the letter "A" in the area that you had referred to as the pond.

A. (Witness complies.)

MR. MacAYEAL: Your Honor, I have marked a photograph as G-100, and may I show it to the witness and have him identify it, please?

THE COURT: Yes, you may. You can show it to him physically or put it on the Elmo.

BY MR. MacAYEAL:

Q. I have put G-100 on the Elmo so it's visible on the computer screens. Lonnie, can you see that?

A. Yes, sir.

Q. Now, I put an "A" down—first of all, what is that photograph?

A. I'm sorry?

Q. What does this photograph depict? [25]

A. It is the Arvin facility.

Q. Okay. Now, I put an "A" down on an area of that photograph. Can you tell me what was located at that particular location?

A. That was just a large sump area.

Q. That was where the facility, the plant drained down there?

A. Most all the everything drained to that corner, yeah.

Q. Did you ever see water puddled up down there?

A. Yes, sir.

Q. Now, do you recall that there was a sump over on the eastern side of the plant?

A. I'm sorry, a sump on the eastern?

Q. Was there a big sump?

A. There was a large sump where that A area is.

Q. Some people called that a sump, but others called it a pond?

A. We called it a sump.

Q. Okay. Was there another sump that was connected with a rinsing location?

A. Yes, sir.

Q. Okay. And let me get you to identify where that is, please. I'm handing the witness Exhibit G-100. Could you write the letter "B," the general area where the rinsate sump was?

A. (Witness complies.) [26]

Q. Just for the record, on Exhibit G-100, you put a "B" down on the photograph, correct? Do you see that?

A. Yes, sir.

Q. What was in that location?

A. Originally, it was one large sump.

Q. Uh-huh.

A. And it had two wash racks, one to the north and one to the west.

Q. Now, in later years, was there an additional

sump placed to the south of that?

A. Yes, sir.

Q. And was that can you put a time period on that? Was it in the 80's?

A. No. It was actually in the 70's. It's when we lined that sump in the back.

Q. Late 70's?

A. Yes, sir.

Q. All right. Now, prior to that time, was let me back up.

Was there a time when the sump or the pond that is marked Exhibit A, was there a time that that was lined?

A. It was lined in the late 70's. Before then it wasn't.

Q. Okay. Now, in connection with that lining and the placement of the new of the smaller sump in let me get you to mark where that smaller sump is placed.

A. Be like the letter "C" or something? [27]

Q. Yes, C.

A. Okay. (Witness complies.)

Q. Thank you. Let the record show that you have put a letter "C" down on the photograph, correct?

A. Yes.

Q. That was where that smaller sump was put in?

A. Yes.

Q. Do you recall what that was for, that smaller sump?

A. At the time when we lined sump number A, we also on number B, we put two small concrete sumps in there. That small concrete sump would drain to underground. We had a pipe that would drain to C to

catch all the sediment and then C would drain into A.

Q. C would capture the sediment?

A. Yes, sir.

Q. Did you install the pipes that connected B, C and A?

A. Yes.

Q. Do you remember when that was? Was that late 70's, early 80's?

A. It was in the late 70's when we lined that pump. I couldn't tell you what year.

Q. Prior to that was there any connection between sump B and the pond A?

A. Not that I'm aware of.

Q. Are you familiar with the product called Nemagon? [28]

A. Yes, sir.

Q. And when you were out there at the plant, was that something that was taken out to the growers' fields?

A. Yes, sir.

Q. And how did that come into the Arvin plant?

A. They would bring it in in 30-gallon drums and 5-gallon drums.

Q. Now, the 30-gallon drums, was there anything done to the 30-gallon drum before it went out to the field?

A. Sometimes, yes.

Q. Was it mixed with water?

A. Yes, sir.

Q. And how would that happen?

A. We would get one of the Bobtails. We would put water in it to an amount of mix that they needed,

we would weigh it, and we would back up and we would get a forklift, raise the drums up, open the lid and dump the drum into the top of the bobtail and mix it.

Q. And then you would transport it to the field?

A. Yes, sir.

Q. And apply it?

A. Yes, sir.

Q. What happened with that? After you emptied the drum, where would that drum be placed, if anyplace?

A. Before we got the property to the west side of the shop, it [29] was stored at the south end. I would have to show you.

Q. Let me have you mark, please, with a "D" where that area was that you just referenced.

THE COURT: Which of the drums were the ones that were used to mix 30- or the 5-gallon?

THE WITNESS: They were mostly 30-gallon drums.

THE COURT: Thank you.

BY MR. MacAYEAL:

Q. Now, on Exhibit G-100, you see on the screen where you have put down a "D"?

A. Yes, sir.

Q. What was that area before you went out onto the west of the warehouse, what was that?

A. That's where we stored all the drums, the 5-gallon cans.

Q. Let me back up. The 5-gallon, did you remember 5-gallon cans of Nemagon?

A. Yes, sir.

Q. How were those applied to the field?

A. They were mostly done with what they called a "dripolator." It was a device that you would open on the drums there were two sizes, on the 5-gallon there would be like a two-inch and three-quarter inch. You would take the three-quarter inch plug out, you would screw this brass dripolator in. It would have anywhere from two to four outlets, sometimes even more, and then you would hang that upside down on the back of the tractor [30] and it would drip out to the shanks.

Q. What happened with the can after it was emptied, if anything?

A. We would bring it back in the yard and store them where that "D" is.

Q. Okay. Now, was there from after you started using the property to the west of the warehouse?

A. Yes, sir.

Q. Was there a did you have occasion to store drums out on that western area?

A. Yes, sir.

Q. Then did you store the Nemagon, the 30-gallon Nemagon drums?

A. Yes, sir.

Q. And these were the ones that had been emptied?

A. I'm sorry?

Q. These are the ones that had been emptied?

A. Yes, sir.

Q. Was there ever an occasion that that area where you marked as D got filled up with rainwater?

A. Yes, sir.

Q. And so what would happen? What would happen to the drums, if anything, that was stored

there?

A. Anything at that time would be stored over on the west side. [31]

Q. Now, what about Weed Killer D, do you remember that product?

A. Yes, sir.

Q. How would that product be applied out in the fields?

A. They would usually put it on with a spray rig, either the farmer's spray rig or else through tractor tanks, and then sprayed out with a hose.

Q. And was that a 30-gallon container?

A. I believe those were 55 gallons.

Q. All right. And—and so those were emptied out on the farmer's field, correct?

A. Right, it was either that way or, in some cases, it was brought out in bulk.

Q. But with respect to the 55-gallon drums, what would happen to the drums, if anything, after they were emptied?

A. We would bring them back in the yard.

Q. Where would you place them?

A. There again, in the early days, it would be down where D is. Later, it was on the west side.

Q. After the fence got taken down and you started using the west side?

A. Yes, sir.

Q. Now, do you recall you testified earlier about a concrete apron to the west of the warehouse?

A. Yes, sir. [32]

Q. All right. What was that used for?

A. Storage.

Q. Of what?

A. We would store mostly Weed Killer D and drums out there and 5-gallon cans out there.

Q. And did you also store that particular material inside the warehouse?

A. No.

Q. And why on did you store some material in the warehouse?

A. Yes, sir.

Q. Was there any distinction between the two products to determine where one would be stored and where the other one would be stored?

A. The Weed Killer D was—if we ever had a problem with a leak or something, it was real messy. It made a mess. It was easier to keep it outside.

Q. Did you ever have occasion to see any leakage from any of those cans?

A. Yes, sir.

Q. What was done, if you recall, after the leak occurred?

A. Depending on what type of leak it was, the can would be picked up, redrummed into another container and cleaned up.

Q. Did you have a hose out there?

A. Yes, sir.

Q. Did you wash off the pad? [33]

A. Yes, sir.

Q. All right. Now, what I was trying to get at, was there some product that was stored in the warehouse, correct?

A. Yes, sir.

Q. Why the distinction? Was there a price were

you concerned about theft of some product?

A. Yes, sir.

Q. Could you explain that?

A. The Weed Killer D was a product that nobody hardly ever would steal. It's low cost. Where Nemagon, Fumazone, Round-Up, all that was expensive.

Q. You would store that and the other products you just mentioned inside the warehouse?

A. Yes, sir.

Q. But the dinoseb was outside on the apron?

A. Yes, sir.

Q. Now, do you recall the did Brown & Bryant have company barbeques from time to time?

A. Yes, sir.

Q. Did you ever have any inside the warehouse?

A. Yes, sir.

Q. Were any steps made to clean out that warehouse before the barbeque?

A. Yes, sir.

Q. What was done? **[34]**

A. We would go in a week before the barbeque, we would empty the warehouse out, take all the material out. It would be swept and then hosed out.

Q. And would it be hosed out in the direction of the west?

A. It would go out all three doors or four doors.

Q. There was a set of doors to the west

A. Yes, sir.

Q. of the warehouse building?

A. Yes, sir.

Q. Now, you were out in the yard quite a bit, weren't you?

A. Yes, sir.

Q. All right. And a lot of what happened out there is the transfer of liquid material; is that correct?

A. Yes.

MR. LASATER: Objection, vague, your Honor, and leading.

THE COURT: All right. The objection is sustained.

BY MR. MacAYEAL:

Q. Did you ever have occasion to see any transfer of liquid material from one container to another?

A. Yes, sir.

Q. Can you tell us what that was?

A. It was all types. It was—it was trucks unloading material into storage tanks, it was Bobtails loading out of storage tanks, it was rebottling materials into drums, a lot of [35] different materials.

Q. Now, did you ever have occasion to see any leakage from that?

A. Yes, sir.

Q. Was that a rare event?

A. No, sir.

Q. Was it common?

A. Yes, sir.

Q. Was it common enough that you didn't particularly pay any attention to it?

A. Yes, sir.

Q. Now, did you ever have occasion to witness any tanker trucks downloading material into the D-D tank?

A. I have seen some in there. I seen all kinds of trucks unloading trucks.

Q. All right. Did you ever have occasion to see any materials transferred from a tanker truck where a bucket would be placed underneath the connection?

A. Yes, sir.

Q. All right. And did you ever have occasion to sec do you remember whether or not that was done in connection with the D-D tank?

A. That was all materials.

Q. And did you ever have occasion to see any spills with that type of activity? [36]

A. That was a common practice, yes, sir.

THE COURT: When you talked about leakage being common, on the transfer of materials from trucks to storage, from tanks out of storage and bottles to drums, where did the leakage go?

THE WITNESS: You mean like on the ground?

THE COURT: Yes, where did it go?

THE WITNESS: Yes, it would be on the ground.

THE COURT: All right. And when you talk about spills from all materials, including the D-D tank, where did the spills go?

THE WITNESS: When they were unloading, sir?

THE COURT: You were asked about buckets being under the connection.

THE WITNESS: Yes. When they were pumping off, we had a 5-gallon bucket we kept out there. When they got through unloading and unhooked their hoses, they would drain their hoses into that bucket and that bucket would be dumped back into the tank they were putting it in or into another storage tank.

THE COURT: Thank you.

THE WITNESS: You are welcome.

THE COURT: And the spills that you referenced, what were those?

THE WITNESS: Just about anything we had in the yard. [37] I have seen spills of one type or another, sir. It was quite a daily

THE COURT: And where were those spills? In other words, what was the receiving point of the spill?

THE WITNESS: I'm sorry, I don't understand.

THE COURT: The material, assumedly, is spilling from a drum, a bottle, a tank, a bobtail and it spilled somewhere. Where did the spill go?

THE WITNESS: It would go usually on the ground. If the bobtail was loading something in the yard anywhere or we were cleaning something out in the yard, wherever that was, it would spill.

THE COURT: Thank you.

THE WITNESS: You are welcome.

BY MR. MacAYEAL:

Q. Now, after you left Brown & Bryant, you went to work for Kisco?

A. Yes, sir.

Q. And do you recall, did you ever have occasion to sell equipment to Brown & Bryant?

A. Yes, sir.

Q. Was there ever do you recall one way or another whether you ever sold a pump to Brown & Bryant in connection with the D-D tank?

A. We sold them pumps and seals, yes. [38]

Q. And do you remember a particular pump that was placed on that D-D tank around 1981 or '82?

A. I remember them buying a pump from us for a D-D tank. I couldn't tell you what year it was.

Q. All right. Now, the area to the south, I'm talking about in reference to the western side of the warehouse, okay, to the south of that parcel.

A. Yes, sir.

Q. Did you ever see any flooding or ponding down in that area?

A. I would have to show you on the map.

Q. Let me hand you Exhibit G-100. Why don't you draw, if you can, the general area where you would see ponding in that southern part

A. That would cover the whole south end of the map.

Q. Okay. Why don't we do it this way. After a rain, would it pond up down by the sump that you marked as A?

A. Yes, sir.

Q. All right. And would that be a different would the water extend to different areas depending upon the rain event?

A. Yes, sir.

Q. Do you have in your mind, though, sort of a typical area that it would cover?

MR. LASATER: Objection, vague.

THE COURT: Do you understand the question?

THE WITNESS: I'm sorry? [39]

THE COURT: Do you understand the question?

THE WITNESS: Yes, sir.

THE COURT: Overruled.

THE WITNESS: It would. I'm trying to see how I can explain it. Let me see. On this map there is a large

tank just abovc

BY MR. MacAYEAL:

Q. Let me put it back on the screen. Could you direct me, you are talking about this tank here?

A. Yes, sir.

Q. All right. Why don't we mark that—is that called the UN-32 tank?

A. That was a UN-32 tank.

Q. Why don't you put an "E" right in the middle of that.

A. (Witness complies.)

Q. Let the record show that I've handed the witness Exhibit G-100. And you have put an "E" down on that picture, correct?

A. Yes.

Q. What does that represent?

A. That was our UN-32 tank, and a flood would come all the way up. If you look at the white line right next to it, there is like a white line that runs all the way down towards C.

Q. Uh-huh.

A. The water would extend all the way up, even up to wherc just below B where the white anhydrous ammonia tank was, just [40] south of it about 50 feet. That would all be under water.

Q. Let me mark the anhydrous ammonia tank, if you would, please, with an "F."

A. (Witness complies.)

Q. Let the record show that I have handed the witness Exhibit G-100. I have put an "F" down on that photograph.

A. Yes.

Q. What does that "F" represent?

A. That was the anhydrous ammonia tank.

Q. And you were talking about where you had seen water ponding?

A. The water would run all the way up to just about 50 feet from that tank just wide enough you could drive a bobtail through without being in the water.

Q. When you say "that tank," which tank are you referring to?

A. I'm sorry. The one that's marked number F.

Q. Would the water be north of that or south of that?

A. Be south of that.

Q. You say it was wide enough for what?

A. Wide enough where you can drive a bobtail before it got into the water. Almost to the tank.

Q. Okay. You talking about the depth?

A. Yes.

Q. And how high was that bobtail tank from the ground surface?

A. The bottom of the bobtail? I could only speculate. I [41] couldn't even guess.

Q. All right. Was it higher than your knees?

A. To the bottom of the truck, I would say yes.

Q. Now, was there a railroad spur running up along the warehouse?

A. Originally there was, yes.

Q. All right. During the time that that railroad spur was there, was there any type of drainage device from the west side to the east side underneath that?

A. No, there was nothing on the west side, just

dirt.

Q. In other words, was water did water on the west side of the warehouse, was that channeled down to the pond?

A. Everything would go down to the pond, yes.

MR. MacAYEAL: All right. No further questions, your Honor.

Excuse me, your Honor. I would like to move Exhibit G-100 into evidence.

THE COURT: Any objection?

MR. LASATER: No, your Honor.

THE COURT: G-100 is received in evidence.

(Plaintiffs' Exhibit G-100 was received.)

THE COURT: Mr. Lasater, you may proceed.

MR. LASATER: Thank you, your Honor.

Mr. Merryman, I still don't think you can see that.

THE WITNESS: Not directly. [42]

MR. LASATER: Maybe we can work on this at the break, your Honor. At this point, if I can just have the witness be able to see it and your Honor.

MR. MacAYEAL: Your Honor, may I sit over here?

THE COURT: You certainly may.

MR. LASATER: I think we can, at the break, work out an easel system in the jury box.

THE COURT: All right.

CROSS-EXAMINATION

BY MR. LASATER:

Q. Mr. Merryman, how are you today? Ike Lasater. I said hello to you again.

A. Fine.

Q. I have put up here on this easel an

enlargement of what has been previously marked as Exhibit 689, that was the deposition exhibit and also the number that the railroad used to designate the exhibit.

So, your Honor, you have that available to you in a binder?

MS. BECKER: Excuse me, I believe it's 687.

MR. LASATER: 687, excuse me, I misspoke. We have a series of binders for the Court.

THE CLERK: They haven't been opened yet.

MR. LASATER: We will get them for you.

THE COURT: Fine. I can work off the large diagram [43] now.

MR. LASATER: So the government counsel will also have that as 687 in the binder.

MR. MacAYEAL: We have a copy of it?

MR. LASATER: Yes.

BY MR. LASATER:

Q. So with all of those logistics

MR. MacAYEAL: Is this it? It doesn't have marking on it.

MR. LASATER: I'm not so sure on the Elmo with all those lines if it don't drive me to distraction.

BY MR. LASATER:

Q. Mr. Merryman, my question to you is whether this exhibit, 687, appears to you to be a reasonable drawing or aerial view map of what you have been calling the Brown & Bryant property and the west side?

A. Yes, sir.

Q. I'm going to use this grid map to identify some of the things that you have testified about here and at

deposition. First, if I might, the fence that you were talking about was a fence that ran approximately on the line, the fence that was removed, ran on a line, that is the H grid line, is that approximately correct?

A. Yes, sir.

Q. And so that fence, it ran actually from the northwest [11] corner of the warehouse on grid line H between grid 4 and 5?

A. I can't see the numbers from here, but

THE COURT: The numbers are on the vertical axis and 1 is on the top going down to 31 at the bottom, which I understand to be the south.

THE WITNESS: Where it's marked right there "fence," that is where the line ran.

BY MR. LASATER:

Q. Okay. This drawing actually shows the fence as being a little bit out to the west from the warehouse. Is that actually the way you remember it?

A. Yes, sir.

Q. Okay. So that you could get let me ask it to you this way. Was there a this is different from the way I understood it, so let me rephrase it.

THE COURT: 12-G-4 and a half to 23-20, that's the fence?

BY MR. LASATER:

Q. Was it along the G grid line?

A. It was in that area, yes.

Q. Was there actually space to walk between the fence and the warehouse?

A. There was a set of railroad tracks that ran through there, so there was enough area to walk between there.

Q. And so the fence, as you remember it, was on the west side [45] of those railroad tracks that were that ran north and south alongside the warehouse?

A. The way I remember it was, yes.

Q. Okay. And then at some point in time, Brown & Bryant leased this property to the west that you call to the west?

A. Yes, sir.

Q. And when that—and how did you find out about that?

A. When they told us to take the fence down and they put the other fence up along the railroad tracks.

Q. That was your supervisor, Mr. Turley?

A. Yes, sir.

Q. And then you and a crew went in there and you ran a drag over this property; is that right?

A. Yes, sir.

Q. And the property there is the western side of the warehouse?

A. Yes, sir.

Q. And you understood that to be railroad property?

A. Yes, sir.

Q. And would you describe the drag to the Court.

A. It was pulled behind a pickup or behind the tractor. It was like a piece of pipe with some chain on it, and there would be like a series of pipe and they would pull this across the ground and it would smooth it out and eliminate whatever weeds and rocks and stuff were there. [46]

Q. Did you ever have a grader in there or actually move soil to try to change the drainage at that time?

A. We had one of the farmers to the east of us, we borrowed his tractor with a scraper on the back and we scraped it.

Q. When you scraped it, what did you do?

A. Mostly and then scraped where everything would drain back towards the back of the yard.

Q. And were there actually railroad rails in place next to the warehouse?

A. Yes, sir.

Q. And you took those out?

A. Yes, sir.

Q. Now, prior to thesc this shift, and I believe you testified, but let me confirm, you are not certain what year that was?

A. I couldn't be exact, no.

Q. Was it your understanding at the time from your supervisors at Brown & Bryant that that took place right after the leasing of that property from the railroad?

A. Yes, sir.

Q. Now, before that lease took place and the activities you've just described took place, the activities of the Brown & Bryant Arvin operation took place on what you've described as the Brown & Bryant property; is that right?

A. Yes, sir. [47]

Q. And that property is shown on Exhibit 689 (sic) as the property that runs along grid line 1 starting at about G or H and runs to the east a little bit past X; is that right?

MR. MacAYEAL: Objection as to foundation, your Honor. This witness doesn't know the property lines. We have other witnesses who will say what the

property line is. I just asked him where west and east are from the warehouse.

THE COURT: I will let the foundation be established. I think you said "689" and my understanding it is 687.

MR. LASATER: First of all, that is correct. It is 687, your Honor.

THE COURT: You can lay the foundation.

BY MR. LASATER:

Q. Let me ask it this way to you, Mr. Merryman. You described the west side fence before Brown & Bryant leased the property from the railroad. Was there a fence in place along the north part of the property that you understood was the Brown & Bryant property?

A. Yes, sir.

Q. And did that run along grid line 1 from approximately G or H all the way to a little past X?

A. On that map, yes, that's where the fence ran.

Q. And then the east side fence ran where it's shown here almost along the X grid line a little bit to the east of the X grid line? [48]

A. That's where the fence was, yes.

Q. And then the fence before the lease, as shown at about G or H and 20, is a curved line that runs from there to the lower right-hand portion of this Exhibit 687; is that right?

A. Yes, sir.

Q. Okay. That's what you called the yard before the lease of the railroad property on the west side of the warehouse; is that right?

MR. MacAYEAL: Objection as to "that." I don't know what he means by "that."

THE COURT: Sustained.

BY MR. LASATER:

Q. The portion that you've described as being within those four fence lines, the southern, the eastern, the northern and the western, before the lease of the railroad property to the west of the warehouse, was that the area that you called the yard?

A. Yes, sir.

Q. And was that the area where Brown & Bryant conducted its activities before it leased property from the railroads?

A. Yes, sir.

Q. And the activities that took place in that area were the activities, among others, included rinsing out of these bobtailed trucks when they came back in after having delivered D-D to the fields? [49]

A. Yes, sir.

Q. And it included, upon occasion, rinsing out nurse tanks that had been used to store D-D?

A. Yes, sir.

Q. And it also was used for the rinsing out of the tanks in which the diluted Nemagon had been transported to and stored at the farmer's field?

A. Yes, sir.

Q. And the rinsing that you just referred to of D-D and Nemagon, that rinsing took place into the sump, which you've identified on the government's exhibit as, I believe, C. That's Government's Exhibit G-100 at B? I'm now handing you G-100.

A. Right, where B is.

Q. And at B on Government's G-100, there were two wash pads, one oriented north and south on the west side of that sump and one that was oriented east

and west on the north side?

A. Yes, sir.

Q. And those were organized to where you could drive a truck or a tank up onto a concrete pad; is that right?

A. Yes, sir.

Q. And there was a drainage hole in the pad?

A. Yes, sir.

Q. And that drainage went into the sump; is that right?

A. Yes, sir. [50]

Q. And that sump, up until 1979 or '80, was unlined?

A. Yes, sir.

Q. Meaning it just had an earthen bottom?

A. Yes.

Q. And approximately how deep was it?

THE COURT: You talking about the sump at B?

MR. LASATER: Yes, your Honor.

THE COURT: And the rinse pads were on the north and

MR. LASATER: The west.

THE COURT: The west sides of the sump.

THE WITNESS: That's right, sir. As for the depth, I have no idea. It was deep.

BY MR. LASATER:

Q. And can you recall ever a time while it was unlined that there was not liquid in it?

A. No, sir.

Q. So it always had liquid?

A. Yes, sir.

Q. Can you give us the dimensions of this unlined sump that's been referred to as B on Government's G-100?

A. I couldn't be exact, but it was probably it was a pretty good-sized sump. It was probably 35 by 35 foot.

Q. You say it was deep. Can you give us a range? It was deeper than a foot? [51]

A. It was deeper than 10 foot, I know.

Q. Prior to leasing the railroad property, was this the only area where Brown & Bryant rinsed out its equipment?

A. That's where we tried to do all of it, yes.

THE COURT: May I ask, what is the estimated time for the examination of Mr. Merryman?

MR. LASATER: Your Honor, I think given how it's going now, I have at least 45 more minutes.

THE COURT: All right. Then will Shell have some questions?

MR. EARLE: We have some questions, your Honor, yes.

THE COURT: It appears to me that we couldn't reasonably keep going. And I don't want to unduly detain you, Mr. Merryman, but we are going to take the noon recess now. We will resume at 1:30, and then it sounds like about an hour or so more.

THE WITNESS: That's fine.

THE COURT: We will stand in recess.

(The lunch recess was taken.)

AFTERNOON SESSION

1:30 p.m.

THE COURT: We are going back on the record in

United States versus Atchison, Topeka.

Mr. Lasater, you may resume your cross-examination.

MR. LASATER: Thank you, your Honor.

Initially, your Honor, I have here a binder that has some of the exhibits. Making sure of who is on first.

I also have provided for the witness what your Honor has just unfolded there, which is a smaller version of the enlargement of Exhibit 687. And then also underneath this, I will come to it in a minute, are Exhibits 1023, 1024, 1025 and 1027.

THE COURT: You want this exhibit in evidence?

MR. LASATER: Your Honor.

THE COURT: 687, is there any objection?

MR. MacAYEAL: There is an objection to the extent that there is some editorial comment on the document and it depicts the site as it was long after the witness had any dealings with it. I think he asked the witness generally does it look like the plant, and I think the witness said yes, but I just want to make it clear that the witness cannot lay a foundation for all these editorial comments about direct --

THE COURT: We will wait for the foundation.

BY MR. LASATER: [53]

Q. Mr. Merryman, looking at Exhibit 687, there in the center is an area that's entitled "dry sealed pumps with inspection door," and it points to a blackened area that's between grid lines 16 -- excuse me, between grid lines 17 and 18 and O and P. Do you see that?

A. Yes, sir.

Q. Okay. Now, that was -- is that what it looked like when that area was an unlined sump?

A. That's the same location, yes.

Q. It's the same location. The wash pad to the west is shown here as being from grid 18 up to midway between 17 and 18 and it is along grid line N; is that correct?

A. Yes, sir.

Q. And that was the wash pad that was there the whole time you worked for Brown & Bryant?

A. Yes, sir.

Q. And there is another wash pad that's to the north of that blackened area that I identified when you first began in this afternoon session, and that is between grid lines O and R and along grid line 16?

A. Yes, sir.

Q. And those were the two concrete wash pads that you testified this morning were where the equipment was pulled up to, they would be washed out, whatever was drained would be drained onto those pads, and from those pads there was a **[54]** connection into the unlined sump; is that right?

A. Yes, sir.

Q. And then sometime about the time that the pond in the southeast corner of the Brown & Bryant property was lined, at about that time, this sump was -- the unlined earthen sump was replaced with two concrete below-ground containers; is that right?

A. Yes, sir.

Q. And they were open at the top?

A. Yes, sir.

Q. And approximately what were their dimensions?

A. I would be speculating, but I would say they are probably 8 foot by 12 foot long and the depth was probably 8 foot.

Q. And were those -- there were two concrete boxes set side by side in the same place where the unlined earthen sump had been; is that right?

A. Yes, sir.

Q. And after those were put in up until the time you left Brown & Bryant's employment, did Brown & Bryant continue to use that sump with those concrete boxes as the washout area?

A. Yes, up till probably four months before I left, and we stopped using them altogether.

Q. And where was washout done at that time?

A. They would still try to use that same area, but we weren't able to wash the trucks. We used to do our cleanup on the [55] trucks and they weren't able to wash there, just the trailers.

Q. And by "the trailers," you mean the tank trailers?

A. Yes, sir.

Q. And by "trailers," are you also including the bobtail trucks that had the big tanks on them that were used to carry product to the farmer's field?

A. Right.

Q. So the operation of rinsing out the inside of the tanks continued up until the time you left Brown & Bryant's employment?

A. Yes, sir.

Q. And it happened at this area where it was first an unlined sump and then they put those two concrete boxes in?

A. Yes, sir.

Q. And the unlined earthen sump, you gave us the dimensions of that before lunch, and you said that it was at least 10 feet deep. I neglected to ask you then, I

ask you now, how much liquid would be in that unlined earthen sump typically?

A. It would be pretty full certain times of the year. It would be up to the very top. Other times, it would be down about 5 foot, 6 foot.

Q. Six foot from the surface?

A. Yes, sir.

THE COURT: And we are talking about the sump in the area of grids line 16, O through R, not the double -- what's [56] referred to as the double lined pond in the lower southeast corner of the property?

MR. LASATER: That's what I'm referring to, your Honor, but I will confirm it with the witness.

BY MR. LASATER:

Q. When I have been talking about the unlined sump that was then replaced with the two concrete boxes, were you referring to this darkened area on Exhibit 687, which is between grid lines 17 and 18 and between O and P?

A. Yes, sir.

Q. Now, we got off onto this about the sump when I was asking you what took place on the Brown & Bryant property before Brown & Bryant leased the property to the west of the warehouse.

MR. MacAYEAL: Judge, I would make an objection to the continued reference to the "Brown & Bryant property," because this witness does not necessarily have a foundation to know where the property line was.

THE COURT: Well, let's do this.

MR. MacAYEAL: If they want to identify it by fence, I have no objection, but there has been no foundation --

THE COURT: Let's determine this. Mr. Merryman, do you know of your own knowledge from the time you were on the property and as of the time you were on the property, if we take the area that is contained within [57] the grids on Exhibit 687, starting on the west with A and going to X on the east, and on the north going from 1 to 31 on the south, recognizing that there is that curve, do you know who owned that property during the period of time you were there?

THE WITNESS: I don't know who owned it, no. I know Brown & Bryant used that facility.

THE COURT: All right. And so we have talked about the fence coming down generally along on the vertical axis grid G. Did you understand that Brown & Bryant at some portion of time while you were there was using all the property within this grid after the fence came down?

THE WITNESS: Yes, sir.

THE COURT: All right. So let's just refer to this for now as the Arvin site, and that way nobody will have to be concerned about ownership until we get that into evidence.

BY MR. LASATER:

Q. Mr. Merryman, if I might develop a terminology with you. You identified area within the fence before the time Brown & Bryant leased to the west of the warehouse, and that was where Brown & Bryant conducted its operations; is that right?

A. Yes, sir.

Q. I'm going to refer to that as the Brown & Bryant yard.

A. Yes, sir.

Q. Okay. And then when I'm referring to the

property that was leased after you began to work for Brown & Bryant, that was [58] leased to the west of the warehouse, I will refer to that as the area west of the warehouse. Are we on the same page?

A. Yes, sir.

MR. MacAYEAL: Judge, I just want to make an objection for the record, because that's going to be extremely confusing when we actually do get a witness to say what the property line is. But if Mr. Lasater wants to define it in terms -- however he wants. I'm using different -- I'm using those same terms to mean different things, just so the record is clear.

THE COURT: I candidly would like it, if we could, for us to all agree on terms to designate these various areas of the property. Does anybody object to referring to the property within the western fence as the Brown & Bryant yard?

MR. MacAYEAL: I do, your Honor, because my understanding is the property line runs along -- the warehouse is on the property line, is what Jack Brown will testify to.

So and, actually, that's where the railroad line was. Obviously, the railroad would own that, because there was a railroad line on it. So to call that area where there was a railroad line the "Brown & Bryant property," that is misleading. That area where that railroad track was was railroad property, and we can get a witness in who will lay the foundation for the property line. But I just think it's misleading when I have been saying west of the warehouse, I [59] mean if you can stand to the west of that warehouse, that's what I mean by that. So now Mr. Lasater is moving it over a couple of feet and I think it's confusing for the record.

THE COURT: All right. Well, then, let's do this. Let's, if we can, refer to the property. Would you agree to grid line H as the western boundary?

MR. MacAYEAL: That is the property line as we have heard, as the testimony, I understand it.

THE COURT: Let's refer to the property from grid line H to the east as the Brown & Bryant I don't care if you call it "yard." You can call it anything you want. And for now, we will refer to the property to the west of that, going over to grid A, either as leased property or railroad property, whichever the parties prefer.

MR. MacAYEAL: Thank you, your Honor.

MR. LASATER: Thank you, your Honor.

BY MR. LASATER:

Q. Okay. I got to remember where I was. I'm trying to identify with some things that took place on the Brown & Bryant property or the Brown & Bryant yard before the property was leased from the railroad, the leased property came into use. You've identified activities that took place at the sump, which was first unlined and then lined. Now, also prior to leasing the property, there was a bulk D-D tank in the Brown & Bryant [60] yard; is that correct?

A. Yes, sir.

Q. And is that shown on this grid map or is this a later version of what was there?

A. That's a later version.

Q. Okay. Would you give us the grid coordinates of approximately where the bulk D-D tank was prior to when it was crushed in the windstorm?

A. Between 11 and 12 and P and Q.

Q. And this --

A. I'm sorry, that's between 12 and 13. I'm sorry.

Q. Between 12 and 13 and P and Q; is that correct?

A. Yes, sir, just east of where that C is.

Q. So there is a tank that is shown right along grid line P between 12 and 13 that has a C in it, which, according to the legend, says "lime sulfur"?

A. I'm sorry. I guess I'm talking about G, the one right there.

Q. So G on the legend, it says "mixer," but what -- regardless -- I'm just identifying what is on the picture.

A. Yes.

Q. What I'm asking you is are you saying that the --

A. Probably to be exact, it was halfway between B and C on that same grid line, they were all in line.

Q. The bulk D-D tank, prior to the time it was destroyed in **[61]** the windstorm, was between -- was on grid line P between 12 and 11?

A. Yes, sir.

Q. Now, I've referred to a windstorm. Would you describe what happened to the D-D tank in the windstorm?

A. It was totally destroyed. It was buckled in half.

Q. Approximately when was that?

A. I can't remember. It was '77 or '78, one of those two years.

Q. And do you remember there being any D-D released from that tank as a result of the windstorm?

A. I don't remember if there was any material in the tank at that time.

Q. Now, that tank held two or three tanker truckloads of D-D; is that right?

A. Yes, sir.

Q. And D-D was delivered into this Brown & Bryant yard at Arvin by these tractor-trailer rigs that were tank trucks; is that right?

A. Yes, sir.

Q. And as far as you know, D-D was never delivered by rail car; is that right?

A. Not to my knowledge, it never was.

Q. Now, these tractor-trailer rigs pulling a tank of D-D would pull into the yard and unload at the D-D bulk tank before the **[62]** windstorm?

A. Yes, sir.

Q. And those would contain approximately 5,000 gallons, or do you have another number in mind?

A. I couldn't tell you exactly. Somewhere between four and five.

Q. And the D-D bulk tank, as it existed before the windstorm, would hold at least more than 10,000 gallons?

A. Yes, sir.

Q. And it was during the delivery from these tractor-trailer rigs pulling a tank of D-D, it was during these deliveries that you personally saw D-D coming out of the hose coupling; is that correct?

A. Yes, sir.

Q. And there was a 5-gallon bucket that was used to try to collect those, but nonetheless, you saw D-D go onto the ground; is that right?

A. Yes, sir.

Q. And you saw at instances when that would

happen you would see at least two gallons on the instances where you saw a fair amount come out?

MR. EARLE: Objection, your Honor. The witness is being led.

THE COURT: Sustained.

BY MR. LASATER: [63]

Q. How much did you see come out did you ever see material come out of the couplings of these tractor-trailer rigs that were delivering the D-D to the bulk tank?

A. I have seen material come out, yes.

Q. Can you give us an estimate of the quantity?

A. It would be hard to say exact. I have seen sometimes just a few cupfuls, other times they would fill a 5-gallon bucket, no problem.

Q. And that would go on the ground?

A. Sometimes it would, yes.

Q. Now, in addition to before the lease of the railroad property let me go at it this way.

There was also on the Brown & Bryant yard, there was an area where you stored—"you," meaning Brown & Bryant employees—stored empty cans of pesticides and herbicides; is that right?

A. Yes, sir.

Q. And those empty cans included 5-gallon cans that had formerly contained Nemagon; is that right?

A. There were some, yes.

Q. And that storage area also contained empty cans that formerly contained Brown & Bryant's Weed Killer D?

A. Yes, sir.

Q. Do you know that Weed Killer D contained a

product called dinoseb? [64]

A. I didn't know what the chemical name was, but it was something like that, yes.

Q. And that can storage area, at some point did it becomc was a concrete pad laid down for it?

A. Yes, sir.

Q. Is that shown on Exhibit 687?

A. Yes, sir.

Q. Is it the area in the south part of the yard near the UN-32 tank that has an arrow to it with a legend that says "concrete can enclosure"?

A. Yes, sir.

Q. Before that concrete pad was put down, had the cans been stored in that same area?

A. Yes, sir.

Q. The empty cans?

A. Yes, sir.

Q. Now, when those empty cans were stored in that area, were they periodically, meaning every couplc every two to three months, did a crew of Brown & Bryant employees go out there and crush those cans?

A. Yes, sir.

Q. And did they use a hydraulic ram, like a log splitter, that would squeeze them down?

A. Yes, sir.

Q. And did you ever see any of the residual contents of those [65] cans go onto the ground?

A. Yes, sir.

Q. And approximately what size area would be affected, the ground area would be affected by the residues from these cans?

A. It would be larger than the area marked "concrete can enclosure." It would be about double that size.

Q. And so after they—after the can enclosure was created and the concrete pad that created it, did Brown & Bryant continue to crush cans in that area?

A. No, sir.

Q. Approximately when was that can enclosure created?

A. It had to be '79 or '80. I couldn't tell you exactly when.

Q. After Brown & Bryant leased the property west of the warehouse and began using it, did the wash rack and sump activities continue to go on in the Brown & Bryant yard where you've testified to them?

A. Yes, sir.

Q. Now, after you left Brown & Bryant's employment and as a result of your coming back because of your work with Kisco?

A. Kisco, yes.

Q. You learned that Brown & Bryant moved their rinse operations to the northern part of the yard; is that right?

A. Yes, sir.

Q. And is that area shown on here as the contained rinse system on Exhibit 687? [66]

A. Yes, sir.

Q. Did after the leasing of the property to the west of the warehouse, did Brown & Bryant ever set up any kind of wash rack or sump on that property?

A. No, sir.

Q. Now, the did Brown & Bryant ever set up a

can crushing area on the property leased to the west of the warehouse?

A. No, sir.

Q. Did Brown & Bryant ever move any of its permanent bulk storage tanks onto the property that had been leased to the west of the warehouse?

A. No permanent bulk storage tanks were used.

Q. Now, after the lease, Brown & Bryant did what you've indicated of oiling and dragging or dragging and oiling, and then as a result of having that lease and taking down the fence, circulation could go all the way around the warehouse, driving circulation could go all the way around; is that correct?

A. Yes, sir.

Q. And there was storage of movable tanks along the north and the west fence line; is that right?

A. Yes, sir.

Q. And there were some pallets stored out there with—for a short period of time with some empty cans on it; is that right?

A. At different times of the year, sir. [67]

Q. And that was mainly during the wet time of the year, because it would get so wet down in the southern part of the Brown & Bryant yard that you would move those empty cans onto the west fence line; is that right?

A. It would be drums that would be stored out there, yes.

Q. Now, before going back to before the lease, did you ever see any Brown & Bryant employees using the leased, the railroad property? Now, this is before Brown & Bryant had a right to use it, did you ever see Brown & Bryant employees running a spray rig out

there?

A. Not to my knowledge, no.

Q. Did you ever see Brown & Bryant out in that area running a spray rig or any piece of equipment, draining it out as they were driving around in order to clear out the tank or the spray rig?

A. No, sir.

Q. Now, Mr. Merryman, with regard to the area that was leased by the Brown & Bryant from the railroads, the area to the west of the warehouse, you've said that that area was oiled. Was it also your view that at some point it was blacktopped?

A. I never seen it blacktopped, no.

Q. Do you remember in your deposition in this case I asked you some questions and you were also asked some questions by Mr. MacAyeal?

A. Yes, sir. [68]

Q. And you were under oath at that time?

A. Yes, sir.

Q. And that deposition was in December of 1997; is that right?

A. Yes, sir.

Q. And at that time you gave as accurate of answers as you could at the time?

A. Yes, sir.

MR. LASATER: Your Honor, and counsel, I would like to refer you to the December 17, 1997 deposition, and I will get it for your Honor. It's been lodged.

THE CLERK: I will have to get them.

MR. LASATER: Is it outside of the room?

THE CLERK: Yes.

MR. LASATER: I will go to something else.

BY MR. LASATER:

Q. Mr. Merryman, I want to go back to the sump, what I have been calling the sump, but it's the area where it has the two wash pads and had an unlined sump and then concrete boxes in there. Did you call that the wash rack?

A. Yes, sir.

Q. So how often was that wash rack used during the busy season for Brown & Bryant?

A. Probably every hour it was open. There was always trailers lined up on it.

Q. So you have testified to something called bobtail trucks [69] that had tanks on them?

A. Yes, sir.

Q. Those were the trucks that went up to the Brown & Bryant bulk tank and unloaded the D-D into the bobtail truck, to the tank on the bobtail truck, and then those werc those trucks were driven out to the farmer's field by a Brown & Bryant employee; is that right?

A. Yes, sir.

Q. And then at the farmer's field, those tank trucks that you call bobtail trucks were offloaded into the nurse tanks that were the four-wheeled mobile tanks that Brown & Bryant would move from one farmer's field to another; is that right?

A. Yes, sir.

Q. Now, when those bobtail trucks would come back into the yard after a delivery of D-D to a nurse tank at a farmer's field, what typically happened to that bobtail truck?

A. If there was a truck, we had a lot of D-D or that particular item would be hauled, he would

probably come back in, he would pull on the scales, get a light weight, pull around, load up again, pull back on the scales and then go back out.

Q. And if that truck came in and was then needed to transport a chemical other than D-D, what would happen when that truck came back into the yard?

A. He would pull back on the scales, he would get a light [70] weight and then go to the wash rack and wash out and then—

Q. Would you describe to us washing out one of those bobtail truck tanks into the wash rack sump?

A. They would pull into the rack. The driver would open a valve inside the truck, it was usually a three-inch or two-inch valve, he would climb up on top of the truck with a hose and rinse the truck out.

Q. When he climbed up on top of the truck, was there a hatch he could open up?

A. Yes, sir.

Q. And then there was a water line, a flexible water line or hose that he would use to spray inside the tank?

A. Yes, sir.

Q. And how big was that water hose?

A. There was two. There was a three-quarter inch hose and an inch-and-a-half hose.

Q. And the valve at the bottom of the truck was open at the time that the Brown & Bryant employee was washing out the interior of the tank; is that right?

A. Yes, sir.

Q. And then that combination of D-D that was left in the—well, let me ask you. Was there ever any D-D left inside of these bobtail truck tanks when they came back into the yard?

A. You could never pump them completely dry. They would probably have five to ten gallons, sometimes 20 gallons left in [71] a truck.

Q. And so this operation that you have described of washing out one of these bobtail tank trucks, that resulted in that residual D-D coming out of the tank with the water on to the wash pad?

A. Yes, sir.

Q. And then what would happen to it?

A. If the driver was able to pull right out on top of the wash rack, it would drain into the sump; if not, run out onto the drainage off the other way into the yard.

Q. Onto the surface next to the concrete wash pad?

A. Yes, sir.

Q. Approximately how often would one of these bobtail trucks with a residual of D-D in them get washed out?

A. It would depend on how many loads we had to haul that day. If we had a lot of D-D going out, it would continue reloading and going. If that particular truck had to change over to a different fertilizer, different chemical, it would rinse out.

They would probably run, during a busy day, those trucks would probably haul 20 to 30 loads, so it depends on how it fell in the schedule.

Q. Would you say it was a daily activity to rinse out a bobtail truck tank that had contained D-D?

A. During the busy season, yes.

Q. And sometimes during the busy season, might you wash out [72] one of those tanks as much as 20 times?

MR. EARLE: Question calls for speculation.

MR. LASATER: I will rephrase, your Honor.

THE COURT: The objection is sustained.

BY MR. LASATER:

Q. During the busy season, did these bobtail trucks with the tanks on them that were running the D-D, did they get washed out with residual D-D—let me phrase it another way.

How often, if you can give us a range, were these bobtailed trucks with the tanks on them washed out after they had had D-D in them?

A. We had three tanker trucks usually running at a time. Each one would probably hold—haul probably ten loads a day per truck. Sometimes more, sometimes less. During the course of a day, I would say each truck probably got washed out at least two or three times.

Q. And that's two or three times washing out residual D-D?

A. That would be whatever they were hauling.

Q. Can you give us an estimate of how often residual D-D would be washed out of these tanks?

A. At least once a day they would clean them at the end of every day.

Q. So is it fair to say at least once a day at the end of the day and sometimes more often than that in a day?

A. Yes, sir. [73]

Q. Now, the nurse tanks that you referred to, I forget what size they were. Were they about 1600 to 2600 gallons?

A. They were 2,000, 2600.

Q. And when they were brought back into the yard after having contained D-D, were they washed

out?

A. Yes, sir.

Q. And was that the standard Brown & Bryant policy?

A. Yes, sir.

Q. And they were washed out in this same rinse rack or

A. Wash area.

Q. The wash area; is that right?

A. Yes, sir, it is.

Q. And then sometimes those nurse tanks, after having been washed out, would be parked on the leased property after the leasing took place; is that right?

A. Yes, sir.

Q. And they were also parked on the yard, even after the leased property had been leased?

A. Yes, sir.

Q. Now, there were no water fittings, no hose fittings along the west, the very west fence line of the leased property; is that right?

A. Yes, sir.

Q. And you don't remember anything ever being washed out along that westernmost fence line? [74]

A. Not against the fence line, no.

Q. Another piece of equipment that was stored on the leased property were water run tanks; is that correct?

A. Yes, sir.

Q. Would you describe to the Court what a water run tank was?

A. It could be a combination of different tanks, anywhere from 200 gallon horizontal tank made out of

steel up to 500 gallon horizontal tanks made out of steel. We had some 1,000 gallon poly upright tanks, and we also had some 1600 gallon polypropylene upright tanks.

Q. Now, on occasion, after Brown & Bryant leased the property to the west of the warehouse, there were 30-gallon drums of Brown & Bryant's BB Weed Killer D that was stored over there, is that right?

A. I don't remember if there were 30 gallons, I think there were 55 gallons.

Q. And those were empty cans; is that right? Empty drums?

A. Yes, sir.

Q. And you never saw any of thc let me back up and ask you.

Brown & Bryant's Weed Killer D had a characteristic color when it went out on the ground; is that right?

A. Yes, sir.

Q. Would you describe that to us?

A. It was a real dark yellow-orange color.

Q. And in the area that these empty drums of Brown & Bryant's [75] Weed Killer D that had formerly contained Weed Killer D, you never saw that characteristic color around those drums; is that right?

A. I never saw it, you said?

Q. That's my question.

A. No, I did see small leaks and so forth at different times.

Q. Did you see that on the leased property?

A. Yes, sir.

Q. Okay. Where were these empty drums stored?

Were they stored between C and D and 13 and 15?

A. For a while they were in that area, and then further south, like 18 and 19 and E and F.

Q. Now, did you ever see any of the characteristic color of dinoseb when these empty drums were stored in the area C and D and 13 and 15?

A. I can't remember positively, but they always there was always small leaks. I believe one time we did have one large spill out there in that area. I don't know if it was exactly in that coordinate, that particular area.

MR. LASATER: Your Honor, I see that we have not yet gotten the deposition transcript.

THE CLERK: You will need to provide the Court with a copy. That's only like a third of what we have in the clerk's office.

MR. LASATER: If you will indulge me for just a [76] moment, your Honor, I think we have extra copies.

THE COURT: Yes, I will.

MR. LASATER: Your Honor, I will provide you with this copy.

THE COURT: Thank you.

MR. LASATER: I would like to direct Court and counsel to page 143, line 22, to page 144, line 8 of Mr. Merryman's December 17, 1997 deposition.

MR. MacAYEAL: Your Honor, this is a prior consistent statement. What statement is it supposedly inconsistent to? Is this on the blacktopping issue?

MR. LASATER: No. It's with regard to dinoseb.

MR. MacAYEAL: You are offering a prior inconsistent statement?

MR. LASATER: Yes.

MR. MacAYEAL: Which—

MR. LASATER: 143, line 22 through 144, line 8.

MR. MacAYEAL: I object. This is not inconsistent. The witness said that he did not remember the particular coordinate, but he did remember seeing it in general. This question relates to the particular coordinate.

THE COURT: The deposition can be used to either impeach or refresh recollection. This question, at line 22 asks him if he saw Weed Killer D in the area between C and D and 13 and 15, and the witness answered that he didn't see the [77] color, he saw it wet over there a few times when the railroad spurs were being torn out.

Now, it does refer to a particular—a specific area of the property. And is the objection that the witness has not made specific where he saw Weed Killer D?

MR. MacAYEAL: I may have misheard his testimony, but I thought he said, one, they were 55-gallon drums, so that is inconsistent. But I thought he said that he didn't remember the specific coordinate, but he did remember in general, so I'm not sure it impeaches, but.

MR. LASATER: Your Honor, in order to facilitate this, I would just as soon go over this with the witness again.

THE COURT: All right.

BY MR. LASATER:

Q. Mr. Merryman, let me tell you what I'm driving at here. You've, as I understand it, correct me if I'm wrong, you've testified that, in the court today, that these empty containers of Brown & Bryant Weed Killer D, after the property was leased from the

railroads, were staged along the fence line from time to time?

A. Yes, sir.

Q. And initially they were staged between C and D and 13 and 15 along that fence line?

A. In that area, yes.

Q. In that area. And then you said at a later time, they [78] moved south along the fence line?

A. Yes, sir.

Q. At the time that they were staged, or stored, between C and D and 13 and 15, did you ever see the characteristic color of dinoseb around those containers?

A. I think I said in my deposition the ground was wet in that area. It would soak up fast. When it would soak up on the dirt and oil, it would turn black, but there were white areas. Usually I would say it was just west of the maintenance shop, so it would be about in that area, yes.

Q. My question to you is whether you saw the characteristic color of Weed Killer D around those containers in that area that we have just identified on Exhibit 687.

A. Not on the ground, no, sir.

Q. Now, you said you saw some wet area near these pallets between C and D and 13 and 15 and it was isn't it correct to say that it was just wet and there was really no color definition to it?

A. Right, it was just dark dirt.

Q. And in light of it just being wet, it could have been water, for instance?

A. Yes, sir.

Q. Now, Mr. Merryman, if I can go back to this blacktopping point. You've referred to it in your

testimony today here as having oiled the area, and I'm asking you whether, in fact, [79] that area to the west of the warehouse was ever blacktopped?

A. I don't remember it being blacktopped. It was they laid down a layer of oil and sand mix. I don't know if you would classify that blacktop or not.

Q. And when was that laid down?

A. When we first put the drainage in and put the grade to it where it would drain to the rear towards the sump.

Q. And was this sand-road oil mix ever laid down after that first time?

A. Not that I remember, no.

Q. Now, every year after the sand and road oil mix was laid down on the leased property, there was an additional application of oil, of road oil; is that right?

A. It was either a year or a year and a half apart. They tried to do it once a year.

Q. And you would leave that area of the leased property that had been covered with this road oil, you left that for up to a week in order for it to dry?

A. Sometimes longer, just depends how fast it soaked in the ground.

Q. What time of year was this spraying done?

A. Usually when the yard was empty during our busy season. We had less trailers to move around.

Q. So what time of the year was the busy season?

A. It was during the summer. [80]

Q. So it was during the hottest part of the year?

A. Yes, sir.

Q. Now, when the filters were taken off of one of these bobtail trucks that had a tank on it, were they

the ones that had the filter or was it the nurse tank that had the filter?

A. Nurse tank.

Q. Did the bobtail tank trucks have filters on them that were checked?

A. No, sir.

Q. So the nurse tanks were these 2,000 to 2600 gallon tanks that were on four wheels; is that right?

A. Yes, sir.

Q. And they had a tow bar that you could pull behind a truck?

A. Yes, sir.

Q. And state highway regulations required that they be towed empty; is that right?

A. Yes, sir.

Q. And was that did Brown & Bryant comply with that law of towing those empty?

A. Most of the time.

Q. That's a big hole, but we won't go into it. Then the nurse tanks would come back in and, as you've testified, if they had D-D in them, it was Brown & Bryant's regular policy that they get rinsed out at the wash rack; is that right?

A. Yes, sir, unless they were going right back out on a job. [81]

Q. And then those nurse tanks, if they weren't going to go right back out, after they were washed, they were parked at various places on the yard or on the leased property, either one; is that right?

A. Yes, sir.

Q. And the process of checking that filter sometimes let some of that residual water, and if there

was any D-D in the water, come out; is that right?

A. Yes, sir.

Q. But that was no more than a gallon or so that would come out of checking that filter, is that right?

A. It would be less than that, yes.

Q. So less than a gallon?

A. Yes, sir.

Q. And that was a water can you describe whether it was D-D or water that came out when the filter was checked?

A. It depends if the trailer had been washed or not. If it had been washed, the strainer had already been removed and it would be mostly water. If it was like sometimes when servicemen would bring it in, they would drain take the strainer cap off, drain the bowl, which usually held a pint or a quart, take the strain out, wash it out, stick it back in, sometimes before it was washed out, sometimes afterwards.

Q. And where was that done?

A. If they could get on the wash rack, it was done at the wash [82] rack. If not, it would be around that area, sometimes west of the building. It just depends where they were.

Q. Can you remember an instance when a the taking the strainer, the filter off of a nurse tank took place on the west side of the warehouse?

A. Yes, sir.

Q. Okay. On how many occasions that you know of?

A. I couldn't be exact. A lot.

Q. Now, D-D is—what happens to D-D or what happens to the person when D-D gets on their hands?

A. It will blister and burn it.

Q. And when people would be taking the filters off and if they got D-D on them or got the liquid that was in the nurse tank, what would happen to them?

A. They would have to go wash their hands. They wore gloves, though.

Q. So it was something that the person who was checking the filter well, one, did you always have to check the filter?

A. The servicemen did, because we had to use them in the field and we wanted them clean before we left the yard. It's easier to clean them in the yard than out in the fields.

Q. Given this effect on the skin that D-D had, this was something that the servicemen would prefer to do around the wash rack where they had the right equipment to do it with; is that right? [83]

A. Yes, sir.

Q. Now, the D-D pull rigs, those are different from nurse tanks; is that right?

A. Yes, sir.

Q. Would you describe a D-D pull rig?

A. It had a—usually a 500-gallon or 600-gallon tank mounted on a two-wheel trailer. Just the trailer actually had a draw bar on the back that could be raised and lowered. On those draw bars, they would run anywhere from 12 to 16 shanks, or tines. "Shanks" is what we called them. They would have a pump mounted on it. It was ground-operated that would pump the material.

Q. If I might show you the exhibits which I have already placed in front of you here, these are some aerial photos.

MR. MacAYEAL: Which exhibit is that, please?

MR. LASATER: 1024, 1025, 1026, and 1027. And the Court should also have those same exhibits in the same notebook as contained Exhibit 687.

THE COURT: Yes.

BY MR. LASATER:

Q. If you would, turn to Exhibit 1025. First off, that is an aerial view of the Brown & Bryant yard and leased property; is that right.

A. Yes, sir.

Q. It's taken from an airplane that's to the northeast of the [84] site; is that right?

A. Yes, sir.

Q. And this photo was taken after Brown & Bryant had leased the property west of the warehouse?

A. Yes, sir.

Q. And you can tell that because there is no fence line along the west side of the warehouse; is that right?

A. Yes, sir.

Q. And you can see the area on that photo which is also shown on Exhibit 687 as the main gate between M and N?

A. Yes, sir.

Q. And that was what the legend on 687 indicates, that was the main gate to the Brown & Bryant site?

A. Yes, sir.

Q. During the whole time you worked there?

A. Yes, sir.

Q. So

THE COURT: Let me interrupt. If we are looking from the northeast, let me orient this grid map, because

MR. LASATER: Your Honor, we are looking from up here down at the site.

THE COURT: Yes, and I'm just trying to all right.

MR. LASATER: I believe the witness can help us orient the Court and counsel.

THE COURT: Yes. You know, I am unless I am [85] mistaken, this seems to be much more from the east than from the north.

MR. LASATER: From the east-northeast, yes, your Honor.

THE COURT: It's strongly bearing east, because we almost have the northern boundary of the property on the vertical axis here.

MR. LASATER: Yes.

THE COURT: All right.

BY MR. LASATER:

Q. If we use, Mr. Merryman, Exhibit 687 as a reference point, this photo is taken somewhere to the upper right of this exhibit; is that right?

A. Yes, sir.

Q. And it's taken to the east and a little bit north of the northeast corner of the site?

A. Yes, sir.

Q. And it's looking back southwest?

A. Yes, sir.

Q. And in the left hand—well, in Exhibit 1025, in the middle on the left-hand margin, is what later was the double lined pond or sump; is that right?

A. That would be yes.

Q. And so on Exhibit 1025, that same feature is shown as a square area and it's labeled the "double

lined pond" and it's [86] in the southeast corner of the site?

A. Yes, sir.

Q. Okay. Looking at the main gate on Exhibit 1025, someone driving in would come in off of that road, which runs almost parallel to the top of this photo; is that right?

A. Yes, sir.

Q. And that was Derby Road?

A. Yes, sir.

Q. And so a person would turn off of Derby Road and drive along the north fence line of the leased property and then some of the Brown & Bryant yard and then turn right into the main gate?

A. Yes, sir.

Q. And then as shown in this photo, 1025, to the right of where a person turning into the main gate would look, are is some equipment stored there along the north fence line; is that correct?

A. Yes, sir.

Q. And if we start at the main gate in Exhibit 1025, the main gate just to the west of the main gate, that first piece of equipment is a D-D pull rig; is that right?

A. Yes, sir.

Q. And then there are a couple of more D-D pull rigs in that photo?

A. There is three more. [87]

Q. And that area north of the warehouse was where the D-D pull rigs were typically parked when they were at the Brown & Bryant site; is that right?

A. For long periods of time, yes.

THE COURT: Let me just ask out of curiosity. Is that a bobtail as you come in the entrance there, just on the east side there in front of what are called thc well, it's actually I can't see it on this. It's—there is a car in front of the warehouse, east of the warehouse and then there is a truck that looks like it's red or orange. Is that a bobtail?

THE WITNESS: Yes, sir, the one with the tanker on the back.

THE COURT: Okay.

BY MR. LASATER:

Q. And that bobtail truck that the Court has just asked you about is just to the west of what's identified on Exhibit 687 as the "contained rinse system"; is that right?

A. Yes, sir.

Q. And that was put in after you left Brown & Bryant's employ?

A. Yes, sir.

Q. But you saw it because you went back there?

A. Yes, sir.

Q. And there were two pads for that contained rinse system?

A. Yes, sir.

Q. Now, the large tank, the largest tank in this picture is [88] the UN-32 tank; is that right?

A. Yes, sir.

Q. And the largest building in this picture is what we have been referring to as the warehouse?

A. Yes, sir.

Q. And south of the warehouse, as shown in 1025, is a maintenance building; is that right?

A. Yes, sir.

THE COURT: Do you want this exhibit in evidence?

MR. LASATER: Yes, your Honor, I would move to have this admitted.

THE COURT: Any objection?

MR. MacAYEAL: No objection.

THE COURT: Exhibit 1025 is received in evidence.

(Defendants' Exhibit 1025 was received.)

BY MR. LASATER:

Q. Now, 1025 was also a picture that was taken after the big pond in the southeast corner had been double lined; is that right?

A. Yes, sir.

Q. And it was after the concrete boxes had been put into the place of the unlined wash-out sump; is that right?

A. Yes, sir.

Q. And the wash rack is shown in this photo; is that right?

A. Yes, sir. [89]

Q. It's the open shedded area that is just north of the anhydrous ammonia tank?

A. That's one of them, yes, sir.

THE COURT: Looks to me like a covered area. I don't see any sheds. I see what looks like maybe it's a shed there, but those look just like aluminum roofing.

MR. LASATER: Is what your Honor is referring to, was it open on all four sides and it had a roof?

THE COURT: Yes, exactly.

THE WITNESS: Yes, sir.

BY MR. LASATER:

Q. And that, Mr. Merryman, was a covered area that was that covered the north wash pad?

A. Yes, sir.

Q. And the west wash pad by the sump did not have a cover on it?

A. That's right.

Q. Okay. The area that's north of the warehouse that's shown both on Exhibit 1025 and 687, was there ever any kind of sump in that area as far as you knew?

A. Not to my knowledge.

Q. So there was no low place where water collected?

A. No.

Q. Now, on the west side of the warehouse, and here I'm talking just the warehouse, on the property that was leased, **[90]** but due west of the warehouse, when it rained, did water collect here?

A. There was one low spot out there. And I want to rephrase my statement. On the north side there was a low area that a little water might set there, but it might be an inch deep.

Q. Getting back to the low place on the leased property, that was down to the southern end of that leased property; is that right?

A. Yes, sir.

Q. So can you tell us, the grid line, 12 or 13, how far north did that low place extend when water was in it?

A. I would say it would be 14, would be about the highest. 13, 14, right in that area.

Q. So that was the most north of that that that

puddle would grow?

A. Right.

Q. And that puddle would extend south to where it says "the gate" on Exhibit 687?

A. It would go down to about 18, grid 18.

Q. It did not get as far as the gate?

A. Usually not, no.

Q. That puddle would go how far to the east? Would it go to G or would it go any past?

A. Yes.

Q. To the east? [91]

A. It would depend on how much rain we had. Usually it stayed right in F and G area right there.

Q. So it was a pretty narrow puddle?

A. Yes, sir.

Q. So it was between F and G and 18 and 13; is that right?

A. Right. As the further north it went, it would go sometimes a little wider over to E and it would kind of follow the fence line and kind of taper down.

Q. But there was no low spot or collection area for water north of 13, grid line 13 that was west on the leased property; is that right?

A. No, everything would funnel to the south end.

Q. Now, if I might turn your attention to Exhibit 392, which I'm about to hand you, do you recognizc

And your Honor, do you have the exhibit?

THE COURT: Yes, I do.

BY MR. LASATER:

Q. Do you recognize what's shown in Exhibit 392 as showing both the Brown & Bryant yard and the

leased property?

A. Yes, sir.

Q. And this photo was taken at a time after you were employed by Brown & Bryant; is that right?

A. Right, it was after that.

Q. Can you recognize or can you date this photograph any more than just to say it was after you left the Brown & Bryant [92] employment?

A. No, sir. It had to be quite a while after I left, because I see somc it looks like they have some recycling water containers in the back, so it had to be towards the end of Brown & Bryant.

Q. And do you see a water puddle on the leased property?

A. I see some dark areas. I don't know if that's a water puddle or not.

Q. Is that dark area on the south part of the leased property, is that in the same area where you earlier described was where water collected after a rain?

A. Yes, sir. It's quite a bit larger what I described.

Q. The photo describes it as larger?

A. Yes, sir.

Q. Now, also in the area to thc shown in this photo, Exhibit 392, which is to the east of UN the UN-32 tank, and to the west of the double lined pond, do you see a water puddle there?

A. I see a dark area, yes, sir.

Q. Was that dark area an area where water collected after a rain?

A. Yes, sir.

Q. And the Brown & Bryant yard directly north of that area drained into that southern portion; is that right?

A. Yes, sir. [93]

Q. And that particularly was the case after the pond was double lined because a berm went up that kept the water from going directly into the pond; is that right?

MR. MacAYEAL: Objection as to foundation.

THE COURT: If he knows.

Do you know?

THE WITNESS: It couldn't get into the pond because there was a berm around it, so it would settle in there.

THE COURT: When you were there, was there a berm?

THE WITNESS: Yes, sir.

THE COURT: All right.

MR. LASATER: Let me clarify that.

BY MR. LASATER:

Q. When the double lined pond was put in, that was approximately 1980; is that right?

A. In that area, maybe a little before.

Q. And up until that time, the water from the Brown & Bryant yard washed into the pond and it there wasn't anything that limited it from going into the pond, it was encouraged to go into the pond?

A. It actually collected in that same area the water is right now. There was a small berm around it, but it had a 12-inch pipe buried in the ground, so all the water from that low area would go into the pond.

Q. And then after the double lining, there was this

sump that [94] was put in that you testified to this morning and that pumped water into the double lined pond?

A. It didn't pump into it, it would run from there into it.

THE COURT: Can we agree on which area we are talking about? Are we talking about the area that is easternmost directly south of the double lined pond or is it the area that is west of the double lined pond and appears to be south of whatever it is, to the south of the anhydrous ammonia tank? It's blue. I don't know what it is. It doesn't appear on the diagram, 687.

That looks like a dark area that might be water. It would be roughly, looks like it's almost contiguous to the west boundary of the double lined pond and it is some distance east of the UN-32 thank. That's an area that looks like it's dark that could be water.

And then there is the second area that is directly south of the southeast corner of the property of the double lined pond. Which one are we talking about?

MR. LASATER: I'm talking about the area that is bounded by a triangle of the UN-32 tank, the anhydrous ammonia tank and the double lined pond.

THE COURT: All right. I'm with you. Let's take the afternoon recess at this time. We will stand in recess until 3:10.

(Recess) [95]

THE COURT: Back on the record in United States versus Atchison, Topeka.

You may continue, Mr. Lasater.

MR. LASATER: Thank you, your Honor.

BY MR. LASATER:

Q. Now, in Exhibit 392, north of the north fence

line to the Brown & Bryant yard and the leased property, there is a building with a light-colored roof and it looks like some pavement around it. Do you see what I'm talking about?

A. Yes, sir.

Q. That's in the upper right-hand portion of this Exhibit 392. Was that area at some point blacktopped?

A. The area just north of the main gate there?

Q. Yes.

A. Yes, sir.

Q. And when did that take place?

A. When they built that facility right there, it was Kernridge Growers, I believe the name of it was. When they built that, they blacktopped that area.

Q. And they blacktopped it as it's shown in this photo, 392?

A. Yes.

Q. And do you know when that took place?

THE COURT: I'm lost. On my 392, you can't see the north fence line. Excuse me. I didn't have the exhibit unfolded, all right. **[96]**

THE WITNESS: I know it had to be I think it was '81, '82, somewhere in that area.

BY MR. LASATER:

Q. And before that blacktopping took place, what was the ground surface there north of the site?

A. It was just a dirt field.

THE COURT: So this is blacktop as of this photo?

MR. LASATER: That's my understanding, your Honor.

BY MR. LASATER:

Q. Did you see the equipment come in there to

blacktop it?

A. I didn't see it come in. But it was a blacktopped surface.

Q. And so at the time that this photo was taken, sometime after you left Brown & Bryant's employ, it's showing the blacktopping as you remember it there when it was first put in?

A. Yes, sir.

MR. LASATER: And, your Honor, this is also a joint exhibit that I would move into evidence.

THE COURT: Joint exhibits are in evidence.

MR. LASATER: Okay. Thank you.

BY MR. LASATER:

Q. Now, if we shift back to the bulk D-D tank, prior to the sand storm, or prior to the windstorm that crushed it, what was it set on top of?

A. Just gravel base. It set on a gravel pad.

Q. And as far as you know, that gravel was set over soil? **[97]**

A. As far as I know.

Q. Shifting to the Nemagon that was handled on the Brown & Bryant site, after the Brown & Bryant bobtail tank truck had taken the diluted Nemagon, diluted with water to the farmer's field and that tank truck came back, it was rinsed out at the wash rack area; is that right?

A. Yes, sir.

Q. And that diluted Nemagon was made from Nemagon that had been delivered to the Brown & Bryant site in 30-gallon containers; is that true?

A. 30 gallons or 5 gallons.

Q. And when it was when the 30-gallon

containers were used to make this diluted Nemagon, it was hoisted up on a forklift, placed over the bobtail truck tank and drained into the top of the tank?

A. Yes, sir.

Q. And that tank had already had water put in it?

A. Yes, sir.

Q. And then that tank truck went off, the 30-gallon containers of Nemagon were kept at the Brown & Bryant yard; is that right?

A. Yes, sir.

Q. And those were rinsed out at the wash rack?

A. Not usually, no.

MR. LASATER: If I could direct Court and counsel to Mr. Merryman's deposition, page 128, line 11, through 22. And [98] I have a copy for the Court.

THE COURT: I have the lodged deposition now, the original.

MR. LASATER: Very well. Absent an objection, I will read these lines.

THE COURT: You may proceed.

MR. LASATER: "Question: Then what happened to the 30-gallon drums after they had their contents had been put into one of these water tank trucks?

"Answer: It depends on where at that time they had the drum storage. For a while, it was by the 32 tank and then for a while, it was over along the west side of the yard."

MR. MacAYEAL: Just for the record, that's "west end of the yard."

MR. LASATER: "West end of the yard."

"They would just leave it on the pallet, take it over

there and then store it until they got ready to rinse them out. And they bring them over to the wash rack. They would rinse them out and then take them back and then leave them stored."

BY MR. LASATER:

Q. Do you remember me asking you that question and you giving that answer at your deposition?

A. Yes, sir. **[99]**

Q. Now, did you ever see an instance when any of the contents of an empty Nemagon can would leak onto the ground?

A. Yes, sir.

MR. LASATER: If, again, I may read, your Honor, or I direct counsel and the Court to page 129, lines 7 through 18.

MR. MacAYEAL: I think there was maybe a time period issue, but maybe the witness I will clear it up on cross, so I have no objection.

THE COURT: You may proceed.

MR. LASATER: Question by myself: "The 30 gallon drums, did you ever, after they were emptied of Nemagon, did you ever see them leak any of their contents onto the ground?

"Answer: No.

"Question: Did you ever hear of that ever happening?"

Objection by Mr. MacAyeal.

MR. MacAYEAL: "Mr. McKae."

MR. LASATER: Excuse me, Mr. McKae.

"I object. It calls for hearsay"—

THE COURT: Don't read the objection. Skip to the answer, unless somebody is reasserting them.

MR. LASATER: "Answer: I never heard of the drums, the 30-gallon drums leaking."

BY MR. LASATER: [100]

Q. Mr. Merryman, did I ask you those two questions and did you give those two answers at your deposition?

A. Yes, sir.

THE COURT: You don't have to ask him that question. The testimony speaks for itself.

MR. LASATER: Very well, your Honor.

THE COURT: Unless you are trying to test his memory, but if it's offered for impeachment, all you have to do is read the question and the answer.

MR. LASATER: Very well, your Honor.

BY MR. LASATER:

Q. Now, harkening back to your testimony earlier today when you were talking about the can crushing that took place near the can crushing area, both well, the can crushing area before there was a concrete pad put there, now, did the residue of those cans at times get to be two to three inches deep and as much as six feet or so across?

A. Yes, sir.

Q. Now, the BB Weed Killer D came onto Arvin site, the Brown & Bryant site both in cans and in bulk; is that right?

A. Yes, sir.

Q. And at least on one occasion, you saw Weed Killer D spill out of the bulk holding tank located on the Brown & Bryant yard; is that right?

A. Yes, sir. [101]

Q. And that was at approximately P and Q and 14

and 15 of the grids, which are shown on Exhibit 687?

A. Yes, sir.

Q. And the BB Weed Killer D that came in in 30-gallon barrels, you never saw any of that residue from those barrels leak out onto the ground at the Arvin site; is that correct?

A. No, sir.

THE COURT: No, is that correct, or yes, is it correct?

THE WITNESS: No. I have seen some of them leak.

THE COURT: You have seen it leak, all right.

MR. LASATER: Your Honor, if I could direct yourself and counsel to Mr. Merryman's deposition, page 139, line 19 through 140, line 14.

MR. MacAYEAL: I object. That's not inconsistent.

THE COURT: It actually amplifies his answer. I will permit the reading.

MR. MacAYEAL: Okay.

MR. LASATER: Your Honor, in particular, I would read from on page 140, line 8 through 14, is the directly contradictory portion. The portion before that he designated to make it clear that we were referring to the 30 gallon D-D barrels.

THE COURT: Yes, you may.

MR. LASATER: Starting on at page 139, line 19.

[102] "Question: Now, what happened to the 30-gallon BB Weed Killer D containers?

"Answer: The ones we took to the field, I don't remember ever bringing any back myself. We did have some empty ones in the yard that other servicemen had brought back and they were stored in two areas or at different times, the different

years they were stored there in two different places.

"Question: Were they rinsed in thc at the wash pads?

"Answer: I never seen them rinse any of them. I don't know if they were done in the field or if they did them in the yard. I never opened one up and looked inside. I never saw anyone rinse them.

"Question: Did you ever see any of the residue in those 30-gallon barrels spill out onto the ground at the Arvin yard?

"Answer: I never seen them spill. I seen spots around them where it was wet. I don't know if it was from that particular drum or something else, but."

MR. MacAYEAL: I would ask that he continuc

MR. LASATER: I would be happy to continue, your Honor, after the colloquy of counsel if Mr. MacAyeal wants me to be more complete.

THE COURT: I think he wants you to start at line 15. [103]

MR. LASATER: Okay.

"Did those wet spots have the characteristic color?

"Answer: Over there it was mostly dirt and it was just wet dirt and."

I would propose to then start reading again at page 141, line 16.

THE COURT: That's correct.

MR. LASATER: "Question: Now, you are saying that there was a wet spot around those barrels that"—

THE COURT: "Around some barrels."

MR. LASATER: "Around some barrels that you were talking about?

"Answer: One time when I came into the yard, I went to drop a trailer and I drove back around and I had a habit of parking on the west side of the yard. It was less traffic over there. It was easier to walk in the shop. And I happened to notice there was a wet spot around where the drums at that particular time were being stored on the west side of the yard next to the fence. And I happened to notice a wet spot. Like I say, I don't know what caused that spot. I don't ask, I just happened to see it.

"Question: And what—and that "wet" spot, what did it look like what did it look to you like?

"Answer: There was all dirt that was underneath the [104] pallets over there and it was just wet and there was no really color definition to it, just wet.

"Question: And approximately what year was this?

"Answer: It was before the dust storm, probably around '79, in the same year. We stored drums over there, I think, a couple of years and it was '78, '79, somewhere in there.

"Question: Now, you were saying on the west side. Can you tell us, using the grid map, where you saw this west spot?"

Should have been wet spot.

"Answer: In the area between C and D and 13 and 15, somewhere right in that area.

"Question: And other than this one occasion of seeing that wet spot around BB Weed Killer D drums, did you see any other wet spots around those kinds of drums?

"Answer: Not around the drums per se, unless it

had been raining or something like that, it would be wet."

BY MR. LASATER:

Q. Mr. Merryman, turning to the D-D pull rigs, I believe you indicated in the course of your testimony that sometimes there was leakage from the sight gauges?

A. Yes, sir. [105]

Q. Is it also accurate to say that you're unable to estimate the quantity that you ever saw leak from one of these sight gauges?

A. I have no idea how many gallons.

Q. When was the concrete apron that was built to the west of the warehouse and right next to the warehouse, when was that put in place?

A. It had to be right after you took out the railroad spur, but I don't know what year that was.

Q. When there was a rain actually going on, there was a thunder storm or rain actually coming down, did you work in thc did you, the Brown & Bryant employees, work in the Brown & Bryant yard?

A. Yes, sir.

Q. So you just kept on working right through the rain?

A. Right. We worked in the maintenance department and the shop working on pumps or different items.

Q. Would you go out into the yard or would you wait until the rain had stopped?

A. Usually when the rain stopped, unless there was an emergency of some type.

Q. Now, the procedures that you have outlined with regard to the wash rack and that area of washing,

do you have any way of knowing how long those procedures had been in place prior to your employment? [106]

A. No, sir.

Q. Now, how did you come to leave Brown & Bryant's employment?

A. I went on vacation and came back unemployed.

Q. What's your understanding of why that happened?

A. I got a letter stating from Jack Brown that I was no longer employed.

Q. And what did you hear was the reason behind that termination?

A. I never got a definite reason. I heard a lot of rumors.

MR. LASATER: No further questions, your Honor.

THE COURT: Mr. Earle, do you wish to cross-examine?

MR. EARLE: Yes, I do, your Honor.

CROSS-EXAMINATION

BY MR. EARLE:

Q. Does the witness have Government's 100 up there?

A. I don't know what that is.

Q. That was the photograph marked by the government at the beginning that you wrote on?

A. I don't see it.

THE CLERK: You took it, Mr. MacAyeal, when you took it off the Elmo.

THE COURT: The number was Government's Exhibit 100. It's not in those binders. It was a

separate sheet.

MR. EARLE: That's all right. I will attempt to work off what has been marked as 387. [107]

BY MR. EARLE:

Q. Mr. Merryman, my name is David Earle, and I represent Shell and we met at your deposition and we met earlier today out at the hall.

I would like to ask you, first of all, sir, isn't it true that you saw more spills of D-D resulting from activities at Brown & Bryant employees loading Brown & Bryant equipment than from tanker trucks unloading D-D at the site?

A. Yes, sir.

Q. I would like to direct your attention to the evaporation pond, which is marked on Exhibit 687 as the double lined pond. Prior to the time that that pond was double lined, was it bermed?

A. It had a berm around it, yes.

Q. Did it have a berm around it as long as you were employed at Brown & Bryant?

A. Yes, sir.

Q. Can you tell me approximately how high that berm was?

A. It wasn't very tall. It was probably just a couple of feet.

Q. And now I would direct your attention to the sump, which you identified as the wash rack, which is right in this area here and it's identified on this grid map as sump number 1. At the time that you worked for Brown & Bryant, was that sump bermed? [108]

A. No, sir.

Q. What kept people from falling in that sump?

A. It had a fence around it, a chain link fence around it.

Q. Is it correct that following the destruction of the dedicated D-D tank at Brown & Bryant during the windstorm that you testified about earlier that there was no bulk storage of D-D at Arvin, at least until sometime after you left that site?

A. Not a stationary tank, no. They did have milk trailers that they would line up and put D-D in.

Q. Was it your testimony earlier that the majority of that that D-D following that windstorm was sent to Shafter for storage?

A. The majority of it, yes.

Q. Can you tell me what was the primary D-D application season?

A. It was during the summer. I couldn't tell you exactly what months. It was during the hot part of the year.

Q. Okay. Were there other parts of the year that D-D was applied?

A. Yes, sir.

Q. What times of the year were those?

A. Before planning getting cotton ground ready. They would use it before carrot ground.

Q. When would that be?

A. Probably in February, back in that area. Sometimes earlier [109] than that. Sometimes later than that.

Q. Can you apply it in the rain?

A. We never did, no.

Q. Can you describe for me, I know that you have testified that most of your duties took you out of the

Arvin yard for field applications, but what were your duties in the Arvin yard?

A. The last couple of years I was there, I was a service manager. I made sure all the servicemen were lined out, had equipment they needed to get them going.

Q. There was never a Shell representative that ever directed you in the performance of your duties as a service manager at the Arvin yard, was there?

A. No, sir.

Q. Did you ever see any Shell employees assisting the unloading of tanker trucks containing D-D at the Arvin site?

A. Shell employees?

Q. Yes.

A. No, sir.

Q. Did you ever see any Shell representative?

MR. MacAYEAL: I would object on foundation grounds, Judge, to the extent one can tell who a particular person works for.

THE COURT: It obviously assumes that you know that a person is a representative of Shell. You can start by telling [110] us if, while you were on the site, working or doing anything else in the period you were there, you ever saw anybody who was identified to you as a Shell employee.

THE WITNESS: Just once in a while, I was in the office, a salesman would come by, but I never seen anybody out unloading.

BY MR. EARLE:

Q. Now, it was Brown & Bryant's policy to regularly wash out the bobtail tank trucks, the nurse tanks and the pull rigs, wasn't it?

A. The pull rigs were hardly never washed out unless they had a problem or they had some sediment or something inside the tank they couldn't get out. The rest of them were washed out regularly.

Q. Did you ever know of any employee or representative of Shell Oil Company directing the manner in which that washing out should take place?

A. No, sir.

Q. You never or were you ever aware of any Shell employee or representative ever assisting or directing in the washing of bobtail trucks, pull rigs or nurse tanks?

A. No, sir.

Q. Your principal job function with Brown & Bryant was the application of D-D in the farmers' fields, was it not?

A. That was one of the jobs, yes. [111]

Q. And incumbent or included within that job was getting that equipment to the farmer's field; isn't that right?

A. Yes, sir.

Q. Any representative of Shell Oil Company ever direct you or assist you in getting the nurse tanks or the other apparatus that you used to farm his field?

A. No, sir.

Q. Any Shell employee or representative ever assist you or direct you in the application of material to a farmer's field?

A. No, sir.

Q. You testified earlier today about washing out Nemagon cans at the wash rack. Any Shell employee or representative ever assist or direct you in that activity, sir?

A. No, sir.

Q. Any Shell representative or employee ever assist you in the crushing of the cans that you testified in crushing down there by the UN-32 tank?

A. No, sir.

Q. Did you ever see any Shell representative or Shell employee assisting or directing any Brown & Bryant employee in the performance of any duties at the Arvin site?

A. No, sir.

MR. EARLE: No further questions, your Honor.

THE COURT: Any redirect?

REDIRECT EXAMINATION [112]

BY MR. MacAYEAL:

Q. While you were working at the Arvin yard, did the entire plant area drain down to that pond?

A. Yes, sir.

Q. And was that the purpose of that pond, to hold rainwater runoff?

A. That area was, yes.

Q. Now, you testified earlier about sight gauges, you remember that?

A. Yes, sir.

Q. Could you explain what a sight gauge is?

A. It's a clear piece of poly tubing that would run the length of the tank. It would tell us how much material was in the tank.

Q. And what types of—were those on pull rigs?

A. Pull rigs, nurse tanks and bulk storage tanks.

Q. Now, did you ever actually see one break?

A. I never seen them break. I seen broken ones.

Q. And did you see those out on the leased parcel

on the west side?

A. I have seen them in all places of the yard and the field.

Q. And would there be a particular time when that would happen?

A. Usually in the evenings, probably, because if somebody seen them leaking, they would stop and fix them, but it could happen [113] at any time.

Q. But you remember them happening at night from time to time?

A. I remember some happening at night.

Q. Now, what is thc what is your best recollection whether the Nemagon cans were rinsed out? Do you recall that they were stored over there on the west parcel?

A. Yes, sir.

Q. What is the explanation of that about whether they were rinsed or not?

A. I don't remember them ever being rinsed. I'm sure they probably were, but I don't know for sure.

Q. Give us your best recollection.

A. I just know when they fill the rig up, we take them and store them over there.

Q. As far as the dinoseb, you saw the yellow material from time to time around the plant?

A. Yes, sir.

Q. And you understood that to be connected with the BB weed—the Weed Killer D?

A. Yes, sir.

Q. Now, how often in a given month how many times, if you can estimate, would employees be checking the filters?

A. It's hard to say.

Q. What's your best estimate? More than 20?

A. Yes, sir. [114]

Q. All right. And these rigs were stored over on the west side?

A. All over the yard.

Q. And you used D-D year-round?

A. At times we did, yes. Mostly in the summer.

MR. MacAYEAL: Thank you.

THE COURT: Anything further, Mr. Lasater?

MR. LASATER: No, your Honor.

THE COURT: Mr. Earle, anything further for Mr. Merryman?

MR. EARLE: Nothing further, your Honor.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 1
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Tuesday, March 30, 1999

REPORTER'S PARTIAL TRANSCRIPT
OF PROCEEDINGS

* * *

[3]

* * *

JOHN WALTON,

called as a witness on behalf of the Government, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name for the record.

THE WITNESS: My name is John Walton, W-A-L-T-O-N.

THE CLERK: Thank you.

DIRECT EXAMINATION

BY MR. MacAYEAL:

Q. Can you please explain to the Court what you do.

A. I'm a professor at the University of Texas at El Paso.

Q. What department?

A. Department of Civil Engineering. Also associated with the Environmental Science and Engineering Ph.D. program.

Q. Do you have any particular specialty?

A. Fate and transport contamination damage.

Q. And what disciplines relate to that particular field?

A. Well, it's a multi-disciplinarian field. It has to do with biology, chemistry, geology, hydrology, engineering.

Q. What about mathematical quantitation?

A. And also part of it, but I do a lot of numerical modeling.

* * *

[16]

* * *

BY MR. MacAYEAL:

Q. Dr. Walton, let's can we why don't we start with dinoseb. What was your you studied the properties of [17] dinoseb?

A. Yes.

Q. And what properties were relevant to your analysis?

A. Some of the major properties are the two major properties, first of all, has very low vapor pressure, so it will not volatilize or vaporize to any significant extent. So if it spills, it tends to stay put.

Second of all, its solubility of water. And one of the questions is if it transports down to groundwater, and so one must know how it behaves with water. It has a mild solubility of water, about 52 milligrams per liter.

THE COURT: Slow down.

THE WITNESS: Fifty-two milligrams per liter.

THE COURT: Moderate solubility.

THE WITNESS: I call it "mild," but these terms depend on context, of course.

BY MR. MacAYEAL:

Q. And why were those factors relevant?

A. Those factors are relevant because when you look at a spill, whether it's on the leased or main parcel, but a spill of dinoseb, you want to know or estimate what would happen with it. And so for something like dinoseb that doesn't have a significant vapor pressure, it will tend to remain in place where it's spilled until it's transported by some other means. In this case, it could either be water or it could be blown by [18] the wind, perhaps.

Q. Now, as part of your analysis, did you look at focused infiltration?

A. Yes, I did. Because of my experience in hydrogeology and also my research experience, I understand that a lot of contaminant migration has to do with preferential pathways and focused infiltration.

Q. Can you explain to the Court what you mean by "focused infiltration."

A. What I mean is we're located in a fairly dry environment; however, what happens, particularly in an industrial site like this, is water tends to be concentrated. That is, for example, you might have the roof of the warehouse, and so all the water that rains on the roof of the warehouse comes down.

In this case, on one half of the warehouse would come down and either come right off the edge or go into the downspouts and then directly back down on the surface. And so if you were looking and standing, for example, at the edge of the warehouse, then it would seem like quite a bit of rain came down right there because all the rain from the whole roof is concentrated on that point.

And what could happen at a site like this is that you have, say, a precipitation event, or what happens in industrial water use, such as hosing out the building, and [19] that water can go out on the parking lot and then it tends to run downhill. And it runs downhill until it gets to places where it can infiltrate, and in a lot of places it can infiltrate. I call it "focused," because you take water from a broad area and concentrate it down to where it seeps in.

The most obvious spot at this site is down at the waste pond. The entire site was created to go down to the waste pond. And so if you have a big storm, the water comes down, it picks up, for example, first of all, with dinoseb. It can pick up and dissolve the dinoseb

or it could entrain the dinoseb. Just like if you wash your driveway with a hose, it can take and wash the dust off. It doesn't have to dissolve, it can wash the dust off. The dust can be entrained in the water.

So it can be entrained in the water and then washed down to, for example, the waste pond. So the waste pond is one point that's one example of focused infiltration.

Q. What's another example?

A. Another example would be we heard Mr. Merryman testify that when they oiled the surface, the oil didn't go all the way up to the edge of the building, because they couldn't spray all the way up to the edge of the building. And it didn't go all the way up to the edge of the path, it stuck out on the leased parcel. And so right there you have a place that's not oiled. [20]

And so you have bare soil that's not oiled. You have water that can come down off the eaves right there, so you have a source of water. You have potentially a source of spills, because you have dinoseb stored out on the pad out there, and so you could have a spill of dinoseb.

You have a rain. From a small rain, turns into a lot when you count how much comes from the eave of the top of the roof all the way down, and it can be infiltrated right there at the gap between, say, the concrete pad and the oiled surface.

There's a lot of examples in a site like this. It would change in time. And people that work there would not necessarily be aware of it.

Another example would be a pothole. You could have a pothole. Mr. Merryman testified you oiled the surface, you drive these heavy rigs over it that's not

properly impacted as you would do to do it properly, so you could get potholes.

It could rain. If those were low spots, the water could run down into the low spots, and if the hole has been put into the surface by, say, a heavy vehicle, then you have infiltration right there. So this is what I mean by "focused infiltration."

* * *

[26]

* * *

Q. Did you study the rainfall as part of your analysis?

A. Yes, I did.

Q. How did you get that data?

A. I got the data from the Weather Service. I think it was the Desert Research Institute that has it. And I originally got it off the Internet, and they had some graphs that were very useful. And then I wanted to do some more detailed calculations and I got some more detailed data from them.

Q. Did you do any analysis of the frequency of rain events?

MR. LASATER: Your Honor, I object at this point. This testimony is testimony that was generated after the expert report and, therefore, contrary to the pretrial order.

MR. MacAYEAL: Judge, this was the subject of the deposition.

THE COURT: Was the rain data relied on disclosed at the deposition?

MR. MacAYEAL: The last session. It was—[27] Mr. Lasater interrogated the witness on the very topic.

MR. LASATER: If this is what I think it is, your Honor, if it's consistent with what has previously been presented, it was presented to me at the first session of the deposition.

THE WITNESS: There were two parts. One was given to him in the first deposition, and then he asked me some questions in the first deposition and I realized how I could answer them, so I came back in the second deposition and gave him some more information.

THE COURT: All right. It would appear that the information has been disclosed. It is frequent that an expert or any other—whether it be a hydrologist, chemist or other, may be questioned in such a way that additional subjects or data are required.

Any competent lawyer would have asked the question of any expert, "Have you done everything you wanted to do, needed to do, was told to do, and is there anything you think you should do?" And in that process, often the expert determines that there is additional work necessary.

And, of course, the closing question always has to be asked, "Have you completed all your work? Is there anything else you're going to do?" And if the expert indicates that there is more, or further inquiry, then the protection for the party is to leave the deposition open and [28] to get the data and then to deal with it so it can be provided, both as a subject of cross-examination, inquiry and analysis, and to the inquiring party's experts. It sounds to me like this was done here, and, therefore, I'm going to overrule the objection.

You may answer.

BY MR. MacAYEAL:

Q. What was the question that Mr. Lasater asked

you at the deposition that you tried to answer for him?

A. Well, initially I had gone to the Weather Service and obtained some data on the probability of precipitation. Because the scenario pathway I'm describing is you have a history of of poor housekeeping and spills that I can only describe as coming at random, because I don't have any other data.

And so when I looked at the DCP, the question is, will rainfall precipitation come before it has time to evaporate. Because if you just let it sit there for a definite period, it will evaporate. And so that was the question.

And Mr. Lasater asked me in great detail about this hypothetical one gallon, about what would happen to it. And that night I had a brainstorm in terms of how I could describe it quantitatively and give him an answer, and that's what I developed at a later time. [29]

So originally I had some data depending on the season, the year, the probability of precipitation following the spilling in a certain period of time. But what you can do is put that kind of data together with the binomial distribution statistics and look at the question if you had multiple spills, what's the probability that one or more of them would be followed by precipitation within a certain period of time after that spill.

Q. What's binomial?

A. The binomial is just a distribution that was statistical distribution. It describes probabilities.

For example, if I were to have a dice right here and if I were to roll that dice, what's the probability that I would—if I rolled it ten times, that I wouldn't never get a 6. And the binomial would answer that for me,

the probability I would never get a 6 if I rolled it a certain number of times.

Q. That's a mathematical computation?

A. That's a mathematical computation. Very common, well understood.

Q. How did you apply that to this question?

A. The way I applied it to this question is I didn't know when the spills were occurring, so I assumed the spills were random in time. And, based on that, I calculated the probability that you get a precipitation event within a [30] certain number of days after any point in time.

So what's the probability if you have a random point in time within 24 hours? You get precipitation. What's the probability within two days? You get precipitation. What's the probability of a week? You get precipitation. And not only precipitation, but the amount is important, because we're talking about precipitation that's large enough to lead to a runoff event.

And so the textbook number for enough precipitation to lead to a runoff event from a parking lot type area is about a millimeter of precipitation. So I actually calculated the probability that you get a millimeter or more precipitation within a certain time period after it was spilled.

Q. What were the results of your analysis?

A. The results of my analyses werc it's in one of these reports here, but I came up with a table that gave those probabilities. And I'm not sure just where it is in this pile of stuff. I'll have to look through it. But within here there's this table of probabilities that I came up with.

So, first, there's a table, but, then, ultimately, the table leads to more specific calculation. The original table just says what's the probability for one spill getting caught by a rain. And if it's, like, within a day, the probability is about 7 percent, and within a week, [31] precipitation is about 20 percent. Now, I'd have to look up the precise numbers, but it's approximately that.

But then you can put it together with the binomial and say, What's the probability if I have, say, 20 random spills that one or more of them was followed by a precipitation? And you can generalize that to one, two, three, four, all the way up to fifty applied it. So I have this chart right here do you want me to show it on the Elmo?

Q. Could you explain that chart, please.

A. Yeah. I'll try to speak up.

THE COURT: Does it have an exhibit number?

THE WITNESS: This was given to Mr. Lasater at my last deposition, so I think it must have a number.

THE COURT: How about for trial?

MR. MacAYEAL: Let's mark it

THE COURT: Have the defendants seen this chart?

MS. BECKER: Could you give us just a second, please.

MR. MacAYEAL: Is this something that was provided at the deposition?

THE WITNESS: Yeah, this is a bigger version, is all. It's the same.

MS. BECKER: Can you tell us the exhibit number from the exhibit list that I'm working on? [32]

MR. MacAYEAL: I will just use it as a

demonstrative exhibit.

Just use it to explain your analysis.

THE COURT: Let me ask one question here, Doctor. The underlying data that you used, which was the precipitation data, how many years did you use for your model?

THE WITNESS: I think I said in here. It's like, I think, 30 some years, if I remember right. I'd have to go back and check the exact, but something like 30 years or more. And it's from Bakersfield, by the way.

THE COURT: That would cover this site?

THE WITNESS: That would cover this site. It was the closest site they had to Arvin that I could find, and that was Bakersfield, and so it was the most relevant data that I could get.

THE COURT: And then how was the precipitation quantified? Was it quantified by volume, by quantity, by frequency, by duration, or what other characteristics?

THE WITNESS: This particular data was daily data by the National Weather Service, and they have standardized methods for collecting precipitation data, and it was depth of precipitation. And so the data I had was depth of precipitation. Like today, they had so many fractions of an inch of precipitation.

And then what I did was wrote a little computer [33] algorithm, and it would sort through the data and it would look and say is the precipitation would go through each day and say, Was there precipitation within 24 hours? Was it greater than the amount of one millimeter? Was it great enough to cause a runoff event?

THE COURT: And the one millimeter, is that a

depth calculation?

THE WITNESS: That's a depth calculation. That's the depth that the Weather Service would report in the newspaper. Quarter of an inch of precipitation, it's a depth.

THE COURT: And so, in your expert opinion, one millimeter of precipitation is sufficient to do what? To penetrate at an infusion site or to carry the contaminant that's being studied in solution or transport it?

THE WITNESS: One millimeter is the value I looked up in the hydraulics text in a reference to generate runoff from a parking lot. That's the point in time, if you have one millimeter precipitation on a typical parking lot, you go out there and you would see that it starts to run off the surface.

And so at that point in time you have enough where it starts to run off on the surface.

And then when it starts—so when it can run off the surface, now you are really integrating the volume of precipitation over a larger area. That is, once it starts to run off, you're taking precipitation from a large area, it [34] starts to collect and flow down, so you start to see flow.

THE COURT: And your assumption was that it was hitting an area that would be comparable to a parking lot in terms of its imperviousness?

THE WITNESS: That is the basic assumption, and it's certainly an approximate number.

THE COURT: But this site is mostly at that time, when you're studying it, unimproved, it is it's, essentially, dirt?

THE WITNESS: No. It's oiled surface that has a

relative low permeability, and so I had to make a decision I mean, ideally, what you'd like to do is go out there and measure this for the site as it existed.

THE COURT: The spill points?

THE WITNESS: Not only the spill points, but the site as a whole, when you start getting runoff. So I decided the closest approximation I could do was a parking lot, but it's just an approximation.

THE COURT: And hearing this last witness, you were in the courtroom, he talks about an area that is oiled, but I don't understand that to be the entire site. In other words, the road oil, if you will and I don't know if it's even sufficient to call it a cap, whatever it was was applied, and that was a portion of the property but not all of the property. And so your analysis is you took the site as being [35] equivalent to that?

THE WITNESS: Right. This calculation gives the analysis as though it were behaving as a parking lot. And I agree with you completely, that it's really an open question, how you describe it, and I felt that was the best I could do it. But if wc

THE COURT: All right. I'm following you.

THE WITNESS: If we came up with a different number of how much it took, that would be very easy to recalculate, and these numbers would change somewhat.

MR. HELDT: Your Honor, for the record, we would object and strike the testimony, because there is an improper foundation here. And it is clearly shown that this area is not a parking lot, and so the foundation basis for the testimony is inappropriate and should be stricken.

THE COURT: Well, it goes to its weight and not its admissibility. I assume on cross-examination these things will be shown. The objection is overruled.

You may continue.

MR. MacAYEAL: Just for the record, your Honor, I will note that the railroad has in their trial brief called it a parking lot, but we'll leave that aside.

THE WITNESS: But that was merely an assumption. It would be very easy to calculate this with some other number.

And what this shows right here is this is the number [36] of random spills. So the spills seem to occur at random, and this is the probability that you get that one or more of these random spills sees precipitation greater than one millimeter, which I'm saying that is greater that can cause runoff.

And as you correctly point out, it depends on the nature of the surface. And what you find is that if you just have a single spill right here, you have the probability off the tables, which is right here. I found my tables, as a matter of fact, if you want to see it.

But when you look at the probability of one or more spill, that if you get a high number of spills, that and, also, I left the number of days open, and we should talk about that, because it's an open question.

How fast does DCP evaporate? It depends on how big the spill is. Is it in the shade? Is it in the winter? Is it in the summer? A lot of questions like that.

And, furthermore, it doesn't just evaporate the spill, it evolves over time, so I don't really know how long it's going to stay around. So what I'll do is calculate a range for you. So if you disagree with me, you can choose, and, likewise, I can calculate a range

rather than the parking lot assumption, we can calculate a greater amount of precipitation to lead a runoff, if you want. And what it says, though, is that if you wait seven days after, that even after ten spills, the probability is [37] almost one, at least one of them will be caught. And if you just look at a one-day lag period, that if you get more than about 50 spills, the probability quickly asymptotes to one.

And in any of these, even if I recalculate and require greater amounts of rainfall to produce runoff, if you get a large number of spills, the probability of at least one of them will be captured by rain and transported down to the waste pond or other focused infiltration site is effectively one.

BY MR. MacAYEAL:

Q. Which means what?

A. Which means that the probability that the leased parcel, if this many number of random spills occurred at the leased parcel, that the probability of the leased parcel contributed to the observed contamination goes to one as the number of spills goes up.

Q. When you say the probability is one, what do you mean by that?

A. The probability is well, when you calculate it here, what it does is it will calculate 99.9999 whatever certainty that at least one or more of them went down there.

Q. Close to a hundred percent?

A. It goes asymptotes to a hundred percent. For mathematicians, it doesn't reach it until it goes into infinity out there, but it goes to what, common sense, you [38] would call a hundred percent.

And so, again, I didn't—it was ambiguous how long it would stay until it evaporated, so I calculated a range to show you. And I'd be very happy to go back, and if someone has a different—what's called—what you're talking about the parking lot is called an initial interception

THE COURT: Let me understand, because I just heard you say something that I'm not sure we can derive from this study. Did you just say that this probability analysis leads to the conclusion of the likelihood that a spill entered the groundwater?

THE WITNESS: What this really says is this is the probability that one or more spills would be captured by the surface runoff and transported the surface runoff. Down the groundwater is an additional step. But this says what's the probability spill will be picked up by the surface water and moved with the surface water to a low spot which is likely to infiltrate.

BY MR. MacAYEAL:

Q. Could you explain the groundwater part of it?

MR. LASATER: Objection, vague.

BY MR. MacAYEAL:

Q. Could you explain your analysis of how it gets to the groundwater, if—

THE COURT: Let's just stay on the first point [39] before we go to the next question.

So this study is one that shows us the probability based on the frequency of random spills, the frequency and volume of a rain that that combination is sufficient to I'm just going to use the word "move" the contaminant over the surface?

THE WITNESS: That's basically correct, yes.

THE COURT: So now you want to go from here to

the groundwater?

BY MR. MacAYEAL:

Q. Well, I guess the key thing is, does it relate to the evaporation? In other words, is the water relevant to the evaporation? And explain how that relates.

A. Well, I think what we need to do is move to the situation of this just looks at can enough water to transport it come before it evaporates. It says that if you have a large number of spills, that it's probable at least one will be picked up by a rainfall.

Q. This is the probability it will be dissolved in water?

A. That it will be picked up and dissolved in water.

Q. And that relates as to whether it will evaporate or not?

A. And that relates as to whether it will evaporate. Now, once it's picked up by the water, the question is transport pathway after that. We haven't really discussed that yet, so [40] I guess that's the next direction you want to go.

THE COURT: I think he was asking you about evaporation, so wait for the lawyer's question.

THE WITNESS: Okay.

BY MR. MacAYEAL:

Q. So this analysis you did, does it relate to whether or not a particular spill will evaporate? Is there what's the chance of water hitting it so that it will dissolve in the water?

A. Right. This is the chance that it will bc precipitation event will come and pick it up prior to the time it would evaporate. That's really all it said. The judge summarized it very well.

Q. And then is the focused infiltration relevant to the infiltration in the groundwater?

A. Yes. The focused infiltration is the major pathway that I believe that the contaminants of concern got to groundwater, is that they were moved by surface water to points of focused infiltration where they could infiltrate with the groundwater and move with the surface water, infiltrate the surface water, then move eventually with the water down to the groundwater. And—

Q. Let me ask you here. Does this analysis about the evaporation that you did, probability analysis, is that applied to the dinoseb? **[41]**

A. No, it does not apply to the dinoseb. The dinoseb does not have a significant vapor pressure.

Q. Dinoseb doesn't evaporate?

A. Dinoseb doesn't evaporate, so dinoseb just stays put until something moves it. And so dinoseb, if you spill it, will just basically stay put until a precipitation event comes and transports it. And so the probability of dinoseb will be impacted by this precipitation runoff event is one. It doesn't evaporation.

THE COURT: This is D-D we're talking about?

THE WITNESS: This is D-D we're talking about, exactly right. This is D-D we're talking about here. Dinoseb doesn't evaporate, so you could wait for a hundred days or wait for a year. And so then the probability is one right away, so this is for DCP and D-D.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 2
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Wednesday, March 31, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

[Direct Examination of John Walton continued]

* * *

[74]

Q. How did this enter into your analysis?

A. The way it entered into my analysis is I first look at the physical-chemical properties of the compound and how they would move and I determine that if you had no water movement, that the dinoseb would not tend to move to the groundwater table. And that in order for DCP or D-D to move to the groundwater table without any movement of water, you would have to have a fairly large spill, fairly large spill. Because if you have a fairly large spill, then the D-D or DCP would move as a liquid, organic liquid on its own down, but that takes a fairly large spill.

However, the DCP is very soluble in water, and so if [75] you have regular movement of water, then the DCP would dissolve in the water and move with the water towards the water table. And so it would move towards the water table.

And so my analysis was that the pathway that would take small spills of DCP or other spills of dinoseb to the water table would be to migrate with the water, because it's—for the organic liquid to go on its own, it takes a great big spill.

So that's the situation I looked at and I looked, do you have this infiltration of water, do you have water at the site, and we talked about that yesterday, and there is enough water at the site to supply this infiltration scenario. One of the most obvious places at the site is the waste pond. And every expert who has worked on this case has said that the waste pond is a major source or location of communication with groundwater. The contaminants get in the waste pond and they move down into the groundwater. That has not been a point of contention. Railroad experts have said that, Shell experts say that. I say that as well. That was not a point of contention and so I didn't look

at it in any more detail, but that's the other scenario.

THE COURT: At what level for the points of reference is the water table under this property?

THE WITNESS: It's not a completely simple answer. There is what's called the A zone groundwater that's about 60 [76] or 70 feet below the ground surface, and that's what we called the perched water level. That is, you get water there because there's a clay layer, stops the water from going down and there's air beneath that and perched zone below that until you get down to lower ground.

THE COURT: Where is the lower groundwater, at what depth?

THE WITNESS: The lower groundwater is couple hundred feet down, I believe. Most of the data you are seeing in this case will be for what's called the A zone, which is this perched water that's about 60 or 70 feet deep. That's what we are pretty much focused on.

THE COURT: And I assume for the plume that we are talking about, that that is diagrammatically represented somewhere.

MR. MacAYEAL: Yes. Different people have tried to draw that plume and different experts will address that.

THE WITNESS: Exactly correct. Is that most of the expert reports have a bunch of pictures that depict that plume.

BY MR. MacAYEAL:

Q. Now, as far as your analysis is concerned, you looked at the infiltration of water and how that affects this equilibrium and you examined what would happen if there were contaminants in that water solution in the subsurface?

A. I looked at what would happen with contaminants and based [77] on the properties of the contaminants, they will behave differently during this infiltration. One infiltration is at the waste pond.

Another case of these focused infiltration spots, where the water puddled down where there is someplace, there is a flaw in the surface and it infiltrates lower and you have a series of rain events that put water into this spot over time. And so you now have system where the water there is migrating down to the groundwater table.

And if you look at the properties of the compounds, if you look at dinoseb, it has a moderate solubility, so what you would expect is that if you have a small spill of dinoseb, that perhaps all of it would be dissolved and move downward with the water. Larger spills of dinoseb, some portion of the spill would be dissolved in the water and move down into the subsurface, and if you came back later on, years later, and you expect to see if there were dinoseb spills, that there was a fair signature of dinoseb at the surface that wasn't all gone and in the shallow subsurface, that is, the water would take it down, but some residual or trace amounts would remain behind.

The DCP behaves differently. It has different properties. It's very soluble in water and so it tends to all readily dissolve, unless you have a very large spill, and but at the same time it has a high vapor pressure and a high Henry's law constant.

* * *

[259]

* * *

ROBERT MANDEL,

called as a witness on behalf of the Plaintiffs, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name.

THE WITNESS: Robert Mandel, M-A-N-D-E-L.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 3
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Wednesday, April 1, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

[Direct Examination of Robert Mandel continued]

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[339]

* * *

THE COURT: Cross-examination?

MR. LASATER: Yes, your Honor.

CROSS-EXAMINATION

* * *

[359]

* * *

BY MR. LASATER:

Q. Now, staying on this topic of the leased property. Now, [360] when I'm referring to the term "leased property," do you understand me to be talking about the area to the west of the warehouse up until the west fence line?

A. Yes, I do.

Q. That area was set up as the clean area for the TAT mobilization; is that correct?

A. Yes, it was.

Q. So within the TAT report itself, there's a map that shows the area west the warehouse, and north is designated as "clean area"; is that right?

A. It's a relative term. "Clean" meaning cleaner than other areas.

Q. And it was clean enough to designate on the map and to utilize for people to go there and park their cars and be in civilian clothes and to walk around and be safe; is that correct?

A. That is correct.

Q. There was a determination in making it the clean area that it was not a hazard to human health or the environment in general; is that correct?

A. I don't know if I would characterize it as I mean, the entire site was a hazardous waste site. In

terms of employee health and safety, we try to find the safest place for them to park cars and to maybe change clothes and things like that. It doesn't mean that it's a safe place.

* * *

[389]

* * *

DON WOODY,

called as a witness on behalf of the Plaintiffs, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name for the record.

THE WITNESS: Don Richard Woody, W-O-O-D-Y.

THE COURT: Ms. Johnson, you may proceed.

MS. JOHNSON: Thank you, your Honor.

DIRECT EXAMINATION

* * *

[411]

Q. Okay. And let me ask you, before you took any samples, did you visually inspect the property?

A. Yes.

Q. You physically walked around? Did you see any visual signs of contamination?

A. Yes, I did.

Q. What did you see?

A. I saw various piles of green, yellowish-green powder which later turned out to be dinoseb. We saw some oil stain or some staining, perhaps is a better word. And lots of signs of just spillage and bad

housekeeping.

Q. Okay. Did you see any of this, what you have learned later to be dinoseb on the railroad property?

A. Yes.

Q. And that was before you began any of your surface investigation?

A. That's correct.

Q. During the surface investigation, did you also take surface water samples?

A. Yes.

* * *

[119]

* * *

Q. Now, the property west of the warehouse as shown on Exhibit 687, the so-called leased property, that area, particularly in the northern part, was initially designated as the safe zone; is that right?

A. I believe that's correct.

Q. Or actually I've misspoke. It was designated the clean area; is that right?

A. Yes.

Q. Well, let me, so that we'll both be on the same page, let me show you Exhibit 1034. And I'm directing your attention to figure 22, which is EPA 201820.

A. I have it.

Q. That's entitled the "Site Safety Map"; is that right?

A. Yes.

Q. And the clean area is designated there with the hatched lines; is that right?

A. Yes.

Q. Did you prepare this map?

A. It was prepared by our site safety people.

Q. And you incorporated it within this report?

A. Yes.

Q. You're the author of this report, 1034?

A. I'm the one who orchestrated putting it together. There were several authors, but, yes, I put it all together and they [450] laid it out to make sure that it came out in the state that you see it now.

Q. In the text on the prior page to this site safety map, under the section 15.0 where it says "Prefield Activities," do you see that?

A. Yes.

Q. In the third sentence in that paragraph just below that heading it says, "The northwest area." Let me stop there. The northwest area was the area that's indicated as the "clean area" on figure 22; is that right?

A. That's what it says, yes.

Q. "The northwest area on the site was designated as the clean area to be used for parking and accepting deliveries."

Was that an accurate statement?

A. Yes.

Q. And when you say "accepting deliveries," that was deliveries of what?

A. Various equipment and documents that would come via Fed Ex. It wasn't like large delivery trucks or anything like that.

Q. And these people would come in the main gate and park in the clean area and then where would they go?

A. There was a doorway south of thc I'm trying

to see what that says, "covered area parking." There was a singlc a normal door where people could walk through just south of that covered area.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 5
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Tuesday, April 6, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

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[753]

* * *

JOHN BROWN,

called as a witness on behalf of the Plaintiffs, having

been first duly sworn, testified as follows:

THE CLERK: Would you please state your name and spell your last name.

THE WITNESS: My name is John H. Brown, B-R-O-W-N.

THE CLERK: Thank you. You may take the stand.

THE COURT: You may proceed, Mr. MacAyeal.

MR. MacAYEAL: Thank you, your Honor.

DIRECT EXAMINATION

* * *

[764]

Let me just get the witness to identify this.

I hand you Exhibit 1070. I'll direct you to the second page. Are you familiar with that document? Have you seen documents like that before?

A. Yes, I have, yes.

Q. Does that look like a Shell marketing agreement that you had that Brown & Bryant had with Shell?

A. Yes, it does.

Q. I direct your attention to the second paragraph which states, "Shell's objective in making this agreement with you is to maximize penetration of Shell's pesticides in the area of your primary marketing responsibility." Do you see that?

A. Yes.

Q. What did you do to make that happen, to help Shell penetrate into the area of marketing?

A. Well, we represented them as a distributor for their products and had all the equipment and everything necessary to apply their products and to

sell their products in the Kern County.

Q. Now, I direct your attention to paragraph three about Brown & Bryant's responsibilities which required you to "Maintain adequate inventories of Shell pesticides in order to provide prompt shipments to customers throughout your primary area of responsibility." Do you see that?

A. Yes. **[765]**

Q. Now, what did you do, if anything, to meet that obligation, that is, to maintain inventories?

A. Well, to maintain D-D inventory, we had to buy bulk tank, keep it in good order so that we could store D-D for in adequate amounts to be supplied to the farmers. We had a warehouse, and we maintained Shell products both at Arvin and in Shafter for so that we could sell it in Kern County.

Q. Now, paragraph four makes reference to it says, "Bring in your key pesticide personnel for a Shell instructed one-day meeting when mutually beneficial. The purpose of these meetings will be to review with your personnel the technical aspects of Shell pesticides as well as pertinent marketing information." Do you see that?

A. Yes.

Q. Did anything like that happen in your relationship with Shell, technical meetings?

A. Oh, yes, we had those meetings quite often.

Q. Tell us—

A. Sometimes they would bc when I first went to work for Brown & Bryant, we would have them in the evenings, maybe—probably for Shell, we would maybe have two a year of what we call real technical meetings where we get something on nematocides or

nematodes or something like that. Later on we would maybe have something about spraying of cotton, either lygus, worms, things like that. Then we would have luncheon

* * *

[777]

* * *

Q. And you had this pond down at the southeast corner of the facility?

A. That's correct.

Q. Now, that pond was not lined at that time, was it?

A. It was unlined at that time.

Q. Was there any type of a berm around it or not?

A. There might have been a small berm around it, but it collected all the rainwater, too, so the water had to run into it.

Q. What was the purpose of that pond? [778]

A. The pond was really just to collect rainwater.

Q. And that was from the entire plant?

A. Yes.

Q. Now, as of 1978, you had moved over onto the railroad parcel, correct?

A. Oh, sure.

Q. Just one thing. You were out at the Arvin facility before you moved over onto the railroad property, correct?

A. Yes, I was.

Q. And you also were involved in the purchase of thc what later became the Brown & Bryant parcel from the Derbys?

A. Yes, I was.

Q. Did you have occasion to become familiar with where the property line was between the Brown & Bryant parcel and the railroad parcel?

A. Do I know where it was?

Q. Yes.

A. Yes, I do.

Q. Could you just tell us generally in connection with the warehouse, how did the warehousc where did the warehouse sit in reference to the property line?

A. The warehouse was on the property line because there wasn't a fence on the west side of the warehouse. The fence went to the north end of the warehouse and started again on the south end. [779]

Q. Now, you had there was a railroad spur that ran up along to the warehouse, correct?

A. Yes, there was a on the west side there was a railroad spur that went clear up into the main warehouse at one time.

Q. Now, did you have an agreement to allow that to occur with the railroads prior to your lease in 1975, was there another agreement that—

A. There was some kind of an agreement about the railroad spur, but it belonged to them. We built it, I think, but it belonged to them.

Q. The railroad spur was on their property?

A. Yes.

Q. The railroad's property?

A. Yes.

Q. Now, do you recall, though, leasing the railroad property, the west of the warehouse, correct?

A. Yes.

Q. What was the reason you needed that property, if any?

A. We were growing quite a bit and we had run out of space. We needed more room, that's why we rented.

Q. Now, the railroad parcel, did it drain into the pond, too?

A. Yes, it did.

Q. Did you take any steps to assist that process?

A. Yes. We graded the railroad property to run to the south and then cut across underneath the tracks. We even put a pipe [780] underneath the tracks to channel the water over to the Brown & Bryant property and down to the main pond, the drainage pond.

* * *

[783]

* * *

Q. Now, do you recall, however, in 1979 that there were you had a contact with representatives from Shell?

A. You're going to have to be a little more specific.

Q. Do you recall whether there was an inspection of your plant by Shell in the summer of 1979?

A. Yes

MR. EARLE: Objection, lack of foundation. Which facility?

MR. MacAYEAL: Arvin facility.

THE COURT: Sustained.

BY MR. MacAYEAL:

Q. In 1979, you were at the Arvin facility, correct?

A. Yes.

Q. Do you recall an individual by the name of Bob Swain?

A. Yes, just barely. They inspected both facilities at the time. Shell came out with some, in my opinion, dramatic new ways of handling D-D, D-D storage, and things like that at this time.

Q. What do you recollect—what context did you have with Shell on these subjects?

A. Well, we had a meeting with Shell. It was it wasn't [784] just me, it was the company, our company meeting, and it might have been other companies. I don't think there was. Anyway, they delineated a lot of new things that they wanted done as far as the handling of D-D was concerned.

Q. What type of things were they?

A. Well, they wanted the D-D tank used with what they call like a closed system where you couldn't vent to the outside. They wanted the D-D tank to be put into an impervious enclosure so that it set inside of a dike, but impervious on our concrete deck where it it was impervious to the ground but it was also diked to hold any spills.

They wanted our field equipment to be put into what they call a closed system where it's kind of like when you fill your gas tank today in a service station, you put fluid in and air comes out, but it the air goes right back to the tank that the gas came out of, and that's what we call a closed system.

* * *

[792]

* * *

Q. Was there a location where tell us describe the procedure under which product was delivered in the bulk tank, the Shell D-D, that is.

A. Well, Shell D-D would come in a commercial carrier, which is a tanker truck. And they although the tanker trucks were supposed to be stainless steel, sometimes they would be aluminum, which was not really what they were supposed to be, but they would come in a double set of doubles, two trailers.

And they would come into our warehouse and we would hook up to them sometimes with a two-inch or maybe a three-inch hose, hook up to the trailers and turn on the pump and pump the D-D into our tank. If the trucker supplied his own pump, then he would come in and just hook up to our tank and turn on his pump and pump the D-D into our tank.

Now, if the trucker pumped D-D into our tank, when he hit the bottom of the tank of his trailer, there would be no he would be pumping air, and on the discharge side of his pump, he wouldn't have any pressure to push that hose full of liquid out. So when he stopped and uncoupled, he had a hose, whatever size that hose was, either two or three inches, whatever length it was, ten, you know, five to ten feet, that would be for the [793] liquid.

And that liquid had to go someplace, so normally they would have a bucket and they would pour it into the bucket and pour it back into his truck, or sometimes we had a tank sitting there and he would pour it into a tank that we had there to catch what we call "dregs."

Q. Let me show you what has been what is in evidence as Exhibit 1123. I ask you first, again, if this Exhibit 1123 appears to be the type of document you received from time to time from Shell?

A. Yes, it is.

Q. Now, I direct your attention to a this is a document entitled an "Outline of General Guidelines for D-D Soil Fumigant Bulk Installations." And I direct your attention to Bates page S003568, and it's Exhibit 1123. It's—purports to be a 1981 manual, and there is a category entitled "Miscellaneous Information." I will just read it.

> First item says, number 1, "Commercial carriers usually deliver through a three-inch cam-lock female fitting. If your pump has sufficient capacity, you can use it to off-load the carrier and, in so doing, the carrier's hose will be drained. If the carrier's pump is used, the hose between the pump and your tank will remain full and must be drained back into the truck or other suitable container." [794]
>
> Do you see that?

A. Yes, I do.

Q. Is that what you are talking about?

A. Yes, that's exactly what I'm talking about.

Q. Now, did you ever have occasion to see any spills in connection with this downloading process where a bucket was used?

A. Almost every time.

Q. Now, when the D-D tank was all corroded and no longer good, did you have to replace it?

A. Yes, we did.

Q. And that happened from time to time, correct?

A. That happened from time to time.

Q. Now, when you were in the process of replacing that D-D tank, did you have to take measures to find some other location to store the material?

A. Yes.

Q. What measures?

A. If the tank leaked for any reason, which it did from time to time, it leaks not only just because it was worn out, it would develop a leak at the pump or you might develop a leak at a valve or anything, you would have to pump the tank out into trailers.

Sometimes we would use 2,000 gallon trailers or 2500 gallon trailers or even milk trailers, pump it into trailers [795] and hold the D-D temporarily while the repairs were made, even if it was meant a new tank, you know.

Q. These trailers were portable?

A. Yes.

Q. And would you store them in various locations around the plant?

A. Yes, we would store them, you know, anyplace in the plant where we could, where we had room.

Q. Do you recall whether they were ever stored over on the western side of the warehouse?

A. Yes, I can remember being stored over there.

Q. Now, let me turn your attention to Exhibit 1075, which is in evidence.

THE COURT: When you say every time there was a loading or pumping there were spills, what are we talking about in terms of quantity?

THE WITNESS: Well, could be anywheres from, oh, maybe a half a cup to two quarts, maybe even a gallon, sir.

THE COURT: Thank you.

BY MR. MacAYEAL:

Q. I'm directing your attention to Exhibit 1075, which is a multi-page exhibit. It's in evidence. And I'm directing your attention to page 30, to the handwritten number page 30, and there is a—an item 6, which I will read to you. I just want you to look at it briefly. [796]

A. Okay.

Q. You see that?

A. Uh-huh.

Q. I'm going to read it and then I will ask you about it. All right. This is quote—this is from a Shell document. It's from a folder that appears to be Shell bulk herbicides, and up at the top it says, item number 6, "Shrinkage."

MR. EARLE: What page?

MR. MacAYEAL: Page 30, which is a handwritten page, which is from Exhibit 1075.

> Item 6, "Shrinkage. Single and multiple destination deliveries by common carrier will be allowed a .5 percent on a weight basis for shrinkage that may occur at time of unloading. The shrinkage allowance will be deducted off the billing invoice."

BY MR. MacAYEAL:

Q. Do you see that?

A. Yes, sir.

Q. Now, was there in the industry a general practice of these so-called shrinkage allowances?

A. Yes, there was on bulk liquid items. Fertilizers had shrinkage allowances. D-D obviously did. And I know in fertilizer it was very common.

Q. All right.

MR. EARLE: Move to strike the reference and the [797] testimony as inflammatory and prejudicial on the grounds that this particular document is beyond the date that Shell exited the D-D market. Shell exited that market in approximately 1983-1984. This is a 1986 bargaining agreement. It, therefore, has no relevance to this case or this product or these deliveries.

MR. MacAYEAL: The document is in evidence, your Honor. I'm just asking the witness a general question.

MR. EARLE: The document doesn't relate to any time period during which D-D was delivered.

THE COURT: All right. Let us take it one step at a time. First of all, if the document is in evidence, is its relevance that it is a prototype?

MR. MacAYEAL: Yes, your Honor, I was just asking him to explain his understanding of that concept as it existed in the industry generally, and I'll lay a foundation for the time period.

MR. EARLE: Your Honor, we have documents from the time period. He doesn't need to utilize this prototype.

THE COURT: Well, I'm only dealing with the exhibit from the standpoint that it's in evidence. And so if there was an objection to it, assumedly that would have been asserted. Apparently it was not. And so if the item is in evidence, it can be referred to, unless you are making a motion to withdraw it from evidence. [798]

MR. EARLE: I will make that motion, your Honor. I did not realize, when the document was originally propounded, that it was a 1986 agreement that postdates this case.

MR. MacAYEAL: Judge, we relied on their representations that they had no objection. We probably would have designated other deposition testimony.

MR. EARLE: Your Honor, there is no doubt, your Honor, but it is a Shell document, which is why and it's genuine, but it has no relevance.

THE COURT: Well, I'm going to permit it to remain in evidence on the representation of Mr. MacAyeal that it is a prototype of the type that was in use, and then the witness has stated that he recognizes the practice of shrinkage, and so that's where we are at this point.

So I recognize that it's an '86 document and that Shell stopped its D-D operations although I don't think I have heard that evidence yet, but that's going to be, that's the offer of proof—in '83-84.

* * *

[800]

Q. Now, getting back to the Regional Water Quality Control Board, you remember them, they were doing the inspection? Did you have a cage out at the plant near the UN-32 tank where you stored cans?

A. I'm sorry?

Q. Do you remember having an enclosure of some kind for can storage?

A. Oh, yes, okay.

Q. What were thesc were these cans that had been used, opened?

A. Yes. These were empty cans.

Q. And some of them you stored in an enclosure?

A. Yes, yes.

Q. What was the reason for—

A. Well, we stored some of them, cans, in a wire chain link enclosure, and kept it locked up because some of those cans had contained highly toxic pesticides and we didn't want anybody to get near those cans until they could be crushed and properly disposed of.

Other cans that we didn't consider, you know, so dangerous, so to speak, we would keep in a over in another area. Mostly they were kept on the west side of the plant up against the fence.

Q. What type of cans were those that you kept over there on the west side? [801]

A. Oh, they would be like herbicide cans and things like that that we didn't consider so highly toxic.

Q. Dinoseb?

A. Dinoseb cans, yes.

Q. What about Nemagon?

A. Probably Nemagon cans too.

Q. Now, do you recall having discussions with the Regional Water Quality Control Board about putting a liner in that caged area?

A. They wanted wherever we stored pesticide cans, no matter whether we considered them highly toxic or not, they wanted our pesticide can storage area set with an impervious deck, so we would pour a concrete deck or some other type of impervious material, and they wanted it all fenced so that cans of any kind could not be easily gotten to.

Q. Did you have room to accommodate all the cans, though?

A. Well, no, we didn't. We had to enlarge the area and

Q. Now, did they also come to ask you to what was your proposal to the Regional Water Quality Control Board about how you would handle the sump and the pond?

A. Well, we—when the Regional Water they asked us for a proposal, so first we started out, we were thinking about just lining the sumps, which were right next to the wash racks in the middle of the yard. We were going to put those in concrete, and then try to cut down the amount of water that we

* * *

[821]

* * *

BY MR. MacAYEAL:

Q. Mr. Brown, I'm going to hand you, again, Exhibit 1123, which is in evidence, and just to refresh your memory, this is a December 1981 set of guidelines on D-D. Do you see that? Have you looked at that earlier?

A. Yeah.

Q. Okay.

A. I see it.

Q. All right. Now, I'm going to direct your attention to Bates page S003566. It's Exhibit 1123. Now, let me just show you this page before I begin. There is an entry about a gauging device, do you see that?

A. Yeah.

Q. See that?

A. Yes.

Q. Now, there is an entry number 4. The first

entry, rather, says it's a reference to gauging devices, and there is four items, and the first one is for a non-sparking calibrated stick. Second one is for a gauge tape. Third is for a bubble or float gauge.

And I direct your attention to the fourth, which is referred to as a "sight tube, (a poor but acceptable alternate)." And then there is (a) that says, "Tube material must not be attacked by tank contents or the natural [822] environment (sunlight)." Do you see that?

A. Yes.

Q. Now, is it your recollection that thc the various rigs that you had, the D-D rigs in particular, had sight gauges?

A. Yes.

Q. And what do you recollect those were? Can you describe what material they were made out of?

A. Sight gauges were made out of Corlon tubing, a type of plastic.

Q. And do you recollect whether there was any particular problem with those sight gauges breaking?

A. Corlon tubing was a is a plastic, and it's fairly stiff, it's not too flexible. It would withstand D-D and D-D could not melt it, like it did most plastics. However, it was not very tolerant to sunlight, and it would get hard and brittle after a period of time, and sometimes even a hard wind would crack it. And then if there was anything in the tank, the way a sight gauge works is you have a hole at the bottom for the liquid to come up and give you a liquid level and you have a hole at the top to let the air out. So that any air gets in the tube as it fills up, the tube fills up. Well, if the tank was half full and the tube broke at the bottom part of the tank, the tank would run out very slowly,

but it would run out.

Q. Do you have any recollection of having to replace those sight gauges from time to time? [823]

A. Yes, you had to definitely replace them from time to time, and sometimes we weren't quick enough to do it and they would break and we would lose material.

Q. Would you ever come back to the plant in the daytime and see the results of a spill from the prior night?

A. Oh, yes. Yes, I have. Sometimes on a very large tank.

Q. Now, did you have those sight gauges on the D-D pull rigs?

A. Yes, we had them on the D-D nurse tanks, pull rigs, yes.

Q. And were those tanks ever stored over on the west side of the warehouse?

A. Yes, they were.

Q. I'm going to direct your attention to Exhibit 1216. We have a lot of exhibits that are like this. I will hand it to the witness. I hand you Exhibit 1216. Have you ever seen a document like that before or a group of documents like that?

A. Yes, I seen this documents just like this before.

Q. What are those?

A. That's a purchase order issued by Brown & Bryant for—this one here specifically is for D-D soil fumigant to Shell Chemical.

Q. All right. Now, I direct your attention to the last page of the exhibit, page 6, six-page exhibit. Do you see that?

A. Yes, I do.

Q. And is there a reference to a—an evaporation allowance?

A. Yes, there is. [824]

Q. Can you tell us what it says?

A. Looks like it's just $122.54. Would be 1 percent, I guess, huh?

* * *

[829]

* * *

You could get rid of these cans by triple-rinsing them and taking them to a county dump or later you could take them to a Class I dump, but at that time we didn't want to triple-mix them and mix that with our rinsate, so we were crushing the cans.

In order to store these cans for up to a year while we were waiting to get a whole dump truckload, we applied for a TSD so we would be legal in storing them for a year.

Q. Did you store these cans over on the railroad property?

A. Yes.

Q. All right. Now, when the Department of Health Services came over and inspected your plant let me back up. The Regional Water Quality Board wanted you to make some improvements, they wanted you to line the sump and pond?

A. We had already done that, though.

Q. Now, do you recall whether or not you moved your rinsing facility from the area where the sump was to another location, the contained rinse area? That's

what I'm talking about.

A. Well, I think this was after the Department of Health Services, we were under investigation, and then under the Department of Health Services order for to do a study and everything. Then we built a contained rinse area on the—it would be on the north side of the plant, the north side of the tank farm there.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 6
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Wednesday, April 7, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

[Cross-Examination of John Brown continued]

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[846]

CROSS-EXAMINATION (Resumed)

* * *

[854]

BY MR. LASATER:

Q. Now, what is your earliest memory of when this unlined sump was used as a washout area for the Arvin operations, the unlined wash rack sump?

A. My earliest recollection was sometime in '64.

* * *

[923]

* * *

Q. Now, if I can direct your attention to Exhibit 391.

A. Yes, I have it.

Q. Is this also an aerial photo of the Brown & Bryant Arvin facility?

A. Yes, it is.

Q. And is there a numeral 4 and a circle over the UN-32 tank?

A. Yes.

Q. And right on the crease there is a tank that appears to be inside a concrete containment. Do you see what I'm referring to there?

A. Yes.

Q. It's just to the left of the tank that has the numeral 5 circled on top of it, do you see that?

A. Not on mine, it doesn't have 5. It has a 3, I think, that's in the containment area.

Q. 3 is in the containment area and 5 is just to the right of the one that has the 3 on it; is that right?

A. Yes, it is.

Q. And the tank that has the number 3 on it, what was that tank? [924]

A. Well, that was either a D-D or a Telone tank, I'm almost positive. After D-D went out, we sold Telone for a while.

Q. Is that the containment and the tank that was put in place as a result of the Shell Bulk Facilities Improvement Program?

A. Yes, it is.

Q. And was Brown & Bryant reimbursed by Shell as a part of that program for putting in that tank and containment system?

A. Yes, they were. They received payments for it, I don't know if complete. That, I'm not aware of.

Q. You're saying that Shell reimbursed Brown & Bryant to some extent, you're just not personally aware to what extent?

A. That's right.

Q. And if you'll look at the area on this photo that has the numbers 11 and 12 circled in handwriting, do you see those?

A. Yes, I do.

Q. Are those the two pads for the contained rinse system?

A. Yes, they are.

Q. And the pad number 12 was a flat concrete pad that you could drive a truck or a trailer onto going east or west; is that right?

A. Yes. It was not really flat, though, it was kind of angled down, it had a little low spot in it.

Q. And it had a bar trench with a graded top over it?

A. That's right.

Q. And that's what you called the sump? **[925]**

A. Yeah, small sump.

Q. The small sump for that facility?

A. That's right.

Q. And the northern one, number 12, was used as a pesticide rinse area; is that right?

A. As I remember, that was the pesticide side of the rinse system, yeah.

Q. And that went into that black open top tank that's between 11 and 12; is that right?

A. Yes, I think so.

Q. And there were spray nozzles inside of that to promote evaporation of the contents of that tank?

A. Yeah, there was a spray nozzle in there, yes, to try to evaporate any water that was in that.

Q. And then pad number 11 was constructed similarly to that of number 12, meaning it was sloped to a bar, concrete bar trench at one end; is that right?

A. Yes.

Q. And 11 was used for rinsing the fertilizer tanks and equipment; is that right?

A. As I remember it, that's right.

Q. And that's the main warehouse directly to the west of that contained rinse area; is that correct?

A. Yes.

Q. And I have one other question. See here along the north [926] fence line where there's a number 18 in a circle with an arrow pointing to a piece of equipment there.

A. I've got two arrows on mine.

Q. Okay. Is the equipment along that north fence line just to the west of the main gate, are those D-D pull rigs?

A. It's hard to say. I think they are, but they could be ammonia pull rigs too, but they look like D-D pull rigs.

Q. Was that the location where D-D pull rigs were typically parked?

A. Yes, we parked, yeah, D-D pull rigs there.

* * *

[932]

* * *

Q. Now, is it accurate to say that you have no personal [933] knowledge of D-D spills on leased on the railroad leased property, personal knowledge?

A. That's accurate.

Q. Is it also accurate to say that you never saw fresh puddles of chemicals on the leased property that appeared to you to have come out of tanks or trailers?

A. Fresh puddle?

Q. Fresh puddles.

A. Yes.

Q. Is it accurate to say that you never actually saw releases from sight gauges on the leased property?

A. I can't remember any that I saw.

Q. And you have no actual personal knowledge of releases of EDB-containing products on the leased property?

A. EDB, no.

Q. Nor do you have personal knowledge of the release of products containing DBCP on the leased property?

A. No, I have no knowledge.

Q. And nor do you have any actual personal

knowledge of the releases of puddles that contained 1,2-DCP, 1,3-DCP or 1,2,3-TCP on railroad leased property?

A. That's D-D?

Q. Yes.

A. No, I don't have any actual, no.

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[980]

* * *

Q. Okay. Do you recall whether Shell Oil Company or any of its representatives ever suggested that Brown & Bryant employees should take control of the unloading of common carrier tanks of D-D in order to ensure that there were no spills in connection with that process?

A. Not really. I think Al was involved in that far more than I was.

Q. I'm going to direct your attention to Exhibit 1123.

A. Twenty

Q. Three. I'm going to ask you to look at page S003568. There is a title "Miscellaneous Information."

THE COURT: Counsel, what was the exhibit?

MR. EARLE: 1123, your Honor.

THE COURT: Thank you.

BY MR. EARLE:

Q. Do you ever recall being advised that "Commercial carriers [981] usually deliver D-D through a three-inch cam-lock female fitting. If your pump has sufficient capacity, you can use it to off-load the carrier and, in so doing, the carrier's hose will be

drained"?

MR. LASATER: Advised by whom?

BY MR. EARLE:

Q. By Shell Oil Company or any representative of Shell Oil Company.

A. No, I don't ever recall being advised. I knew that from unloading them myself.

THE COURT: How was the unloading?

THE WITNESS: I unloaded them myself sometimes, sir, years ago.

THE COURT: How did you do this to avoid spilling?

THE WITNESS: I did it with our pump. But they had a three-inch cam-lock fitting on them and we had a three-inch hose.

THE COURT: And the pump obviously pressurizes the liquid coming out of the tank that's delivering, so what do you do to stop the hose from leaking when you disconnect?

THE WITNESS: That was always the problem, your Honor. That was always the problem. I would like to know.

They did eventually develop what they call and it might have been around for a long time, they had a dripless coupling. Had a ball bearing like a hydraulic coupling or an [982] air coupling, but to get one in stainless steel and vikon steel for D-D was prohibited for a long, long time.

BY MR. EARLE:

Q. Again, Mr. Brown, directing your attention to Exhibit 1123, wasn't the point of the first sentence in paragraph 1 that if you put the pump on the tank side as opposed to the truck side, that it will drain the hose

in connection with the pumping before it runs out of product?

MR. MacAYEAL: Objection, your Honor. Asking the witness what the meaning of this document is, and he didn't write it, what the intent of the writer is.

MR. EARLE: I will rephrase the question.

THE COURT: Well, we are on H-1 on page 5?

MR. EARLE: That's correct, your Honor.

THE COURT: Did you understand this question, Mr. Brown?

THE WITNESS: Yes, I understand it, your Honor.

THE COURT: Does it have any applicability to your operation?

THE WITNESS: Yes. You never get it all, that's all I can say. You never get it all.

BY MR. EARLE:

Q. Are you familiar with a term, sir, called "walking the hose"?

A. Pardon? **[983]**

Q. Walking the hose?

A. Yeah, I have seen it done. Done it.

Q. Why don't you describe for me what it means to walk the hose?

A. Well, you take the hose and disconnect it from the nurse tank, or the cargo tank, the common carrier. And then you are running the pump, and as you run the pump, you walk the hose down and try to drain every bit of it into the pump and to get all that in the tank. But when you walk the hose down, then you have to be able to shut it off and then shut off your pump, keep the pump pumping all the time for the pressure, and this is possible, and you can get most of it, but you'll never get

it all. That's why they had buckets.

Q. And using a bucket it's possible to get it all, isn't it, sir?

A. Pretty much so, but I have seen them walk the bucket, too, and then the bucket fell over, so. (Witness shrugs)

Q. Did you ever consider putting a pad in the area of the tank delivery system, a concrete pad?

A. No, I don't remember even considering that.

Q. It would have been possible to put a mini dike containment system in the area where D-D was delivered, would it not?

A. Yes.

Q. It would have been possible to correctly walk the hose and collect what little bit was left in a bucket and carry that to [984] an appropriate place to dispose of it or save it for an application, wouldn't it?

A. Yes.

Q. So spills were not inherent in the process of delivering D-D, were they?

MR. MacAYEAL: Objection, your Honor. There is two different practices. There is when the pump is on the truck pushing it through the hose and then there is the alternative, when the pump is at the tank sucking it dry. Which practice is he talking about?

MR. EARLE: I will rephrase the question.

THE COURT: Sustained.

BY MR. EARLE:

Q. Mr. Brown, I thought we had just talked about both practices, whether the pump was on the tank excuse me, the pump was on the tank side or whether the pump was on the trailer car side, and I thought we had determined that under both of those scenarios

there were methods available to deliver the product and not spill; isn't that true?

A. What do you call a "spill"?

Q. Release it to the ground where it can go to the groundwater.

A. I don't think that any way you get it you could get away without spilling, you know, at least a half a quart.

Q. I thought you just told me five minutes ago that you would [985] have prevented it from hitting the dirt if you put in a little concrete containment system in the area where it was delivered.

A. We didn't have one.

Q. But that wasn't because Shell Oil Company told you not to build one, was it?

MR. LASATER: Objection, argumentative.

THE COURT: Overruled.

THE WITNESS: No. Shell never told me not to build it.

BY MR. EARLE:

Q. Spills are not inherent in the process. My point is, sir, weren't there steps you could have taken, if you chose, so that you never had to spill a drop of it on the bare ground?

MR. LASATER: Objection, your Honor, to the word "inherent" as being vague, both in the sense of is it foreseeable that, in fact, humans operating the system will do it.

THE COURT: Did you consider putting in a containment system?

THE WITNESS: No, sir.

THE COURT: And what was the reason for that?

THE WITNESS: It never appeared to be that big of a problem.

THE COURT: Thank you.

BY MR. EARLE: [986]

Q. Do you recall an employee by the name of Charles Dickey, a Brown & Bryant employee?

A. Yes. Yes, I do.

Q. You say that with a bit of humor.

A. Well, he was a very funny guy.

Q. Took a shower in D-D, I understand it?

A. Pardon?

Q. Took a shower in D-D, I understand it?

A. I don't remember him—I remember another employee that did it.

Q. His duties to deliver fertilizers and fumigants kept him in the yard quite a bit, didn't they?

A. Yes.

Q. Now, you testified yesterday that D-D was spilled every time it was delivered; do you recall that testimony?

A. Yes.

Q. Were you out there every time it was delivered?

A. No.

Q. How do you know that?

A. I just from my own experience and seeing it done so many times that I think every time you brought in a bulk load, you were going to spill some of anything, fertilizer or anything.

Q. Charles Dickey testified that he never saw a common carrier spill D-D on the ground while it was unloading. Can you explain his testimony in light of

yours? [987]

MR. MacAYEAL: Objection. Assumes a fact that's not in evidence as to what his testimony is. The man hasn't testified.

THE COURT: All right. The technical objection is sustained.

If you assumed that Mr. Dickey said he had never seen a spill, would that be consistent or inconsistent? What would be your understanding of that?

THE WITNESS: (Witness laughs) If Mr. Dickey didn't see a bathtub spilled, then he wouldn't call it a spill. That's my answer. That's the way he was.

BY MR. EARLE:

Q. When is the first time that you recall seeing a common carrier deliver D-D and spill any measurable quantity at Arvin?

MR. MacAYEAL: Objection as to "measurable." It's vague.

THE COURT: All right. Why don't you just consider the question, do you remember the first time you saw a common carrier deliver D-D and you saw some of it get on the ground? We won't specify how much. Some of the D-D?

THE WITNESS: Probably sometime in '68, '69.

BY MR. EARLE:

Q. And at that time you were the plant manager at Arvin?

A. Yes.

Q. How much was D-D going for in 1968, 1969? [988]

A. I don't remember. I do remember selling it for $1.10. $1.15 a gallon.

Q. At $1.10, $1.15 a gallon, if somebody spilled a gallon, that's a $1.10, $1.15 on the ground?

A. Yes.

Q. Did you ever take any action back that when you saw it?

MR. MacAYEAL: Assumes a fact not in evidence.

THE COURT: I think he's being asked to assume that in the question, and you may answer it with that assumption.

In other words, if you were seeing that kind of quantity spilled, were you warning the employees, taking any kind of steps to deal with that?

THE WITNESS: We did. A hundred thousand gallons, you get maybe 4,000 gallons to a truckload. You got 25 loads a year, $25 a year, you don't worry about it too much.

BY MR. EARLE:

Q. You didn't worry about it too much, that's a Brown & Bryant decision, correct?

A. That's a Brown & Bryant decision.

Q. You acknowledge that had you worried about it had Brown & Bryant worried about it, there are steps that Brown & Bryant could have taken to ensure that nothing spilled; isn't that right?

A. I guess so. I don't know.

Q. Thank you. Do you ever recall receiving an evaporation [989] allowance for D-D from Shell Oil Company?

A. No, I do not recall that.

Q. Do you recall anyone from Shell Oil Company providing Brown & Bryant with advice regarding appropriate couplings or valves to use on equipment delivering D-D?

A. Not specifically, no.

Q. Do you recall Shell Oil Company suggesting the use of dripless couplers?

A. I don't remember that specifically.

Q. Do you ever recall a Shell employee or representative inspecting the wash site sump that we've identified in the center of the Arvin property?

A. No, I do not recall that.

Q. Do you ever recall a Shell representative or employee inspecting the evaporation pond, the southern portion of the property?

MR. LASATER: Objection, vague as to inspection—"inspecting."

THE WITNESS: I don't remember that.

THE COURT: Overruled. You may answer.

THE WITNESS: I don't remember that.

* * *

[999]

* * *

A. Yes.

Q. And there was also discussions about a closed system?

A. Yes.

Q. And there was discussions about valves and packing on tanks?

A. Yes.

Q. All right. Now, how did you what was your belief as to whether were they asking you to do this or were they telling you to do this? What was your impression?

A. My impression was that they were telling me

to do it, that they were telling Brown & Bryant that they had to do these things in order to continue to be distributors for D-D.

Q. Now, did these matters that they wanted you to do, did they involve some expense?

A. Yes, they did.

Q. Is that something you were happy to incur at that time?

A. No, not really.

Q. So you didn't—it wasn't necessarily something you were eager to do, all these various improvements; is that correct?

A. No, I was not eager to do them.

Q. But Shell told you to do them; is that right?

A. Shell told us to do them.

Q. Now, had your relationship with Shell changed such that had they told you to do these matters in the past, it would have [1000] been different?

MR. EARLE: I'm going to object. That question is vague, calls for speculation.

THE COURT: Sustained. Rephrase.

BY MR. MacAYEAL:

Q. Now, are you familiar with the relationship you had with Shell, correct?

A. Yes.

Q. As of the time that you were having these discussions in 1979, had it changed had the relationship changed prior—as it was prior to that time?

A. I don't think so, no.

Q. All right. So based on that relationship, if they had told you to make these improvements in earlier

years, you would have done them at that time as well; is that right?

A. Yes, I think so, sure. I would have had to.

* * *

[1004]

* * *

Q. Now, Mr. Lasater asked you if you had ever witnessed any releases, and I think he asked you if you had seen any recent [1005] releases or new releases, or something of that effect.

Did you ever see any evidence of spills or releases out at the plant?

A. Well, you could take a walk over in that area and see spots on the ground where things had leaked or, you know, spilled.

Q. Were you ever aware of any practices with respect to D-D rigs as far as checking filters?

A. Well, if an order came in that you needed a D-D rig, then somebody would tell the serviceman, "We are going to take a D-D rig out to Joe Smith's farm. Go get it ready." And part of getting that ready was to clean out the filters and everything. When you cleaned out the filters, usually they had material in them and the material would go on the ground.

Q. Did you see that happen?

A. A quart, maybe, or less.

Q. Did you see that happen?

A. Oh, yeah, I have seen that happen. I don't remember specifically on the railroad property, but I have seen it happen.

Q. But in other words, were those rigs parked

over on the railroad side?

A. Yes.

Q. Okay. So when you say you remember it, you remember it generally?

A. Generally, yes. [1006]

Q. But not any specific area?

A. Not any specific place.

Q. Now, do you recall whether or not Shell ever gave you any technical advice about the mobility of the D-D constituents in the groundwater? They ever give you any advice about that or technical advice?

A. I don't remember that, no.

* * *

[1011]

* * *

Q. I want to look at one thing for a moment. Did you have any understanding let me phrase it another way.

Did you ever see the D-D being unloaded from the tanker truck into the Brown & Bryant bulk storage tank by the driver of the tanker truck?

A. Boy, I don't remember.

Q. Do you know whether that happened?

A. Oh, I'm sure it did.

Q. Was that is it your understanding that that was a common occurrence?

MR. EARLE: Move to strike. Lack of foundation.

THE COURT: Well, do you have any knowledge?

THE WITNESS: No, sir, I really don't.

THE COURT: Sustained.

BY MR. LASATER:

Q. Mr. Brown, you were the plant manager out there and your office was 20 or 30 yards away from the bulk D-D tank; is that right?

A. Yes, it was on the other side, though. I couldn't see it [1012] from my office.

Q. You would move around the facility?

A. Oh, sure.

Q. You would see the tanker truck delivering D-D?

A. Yeah.

Q. It was coming 25 or more times a year on average; is that right?

A. Yeah.

Q. And you would have the opportunity to see whether it was, in fact, a Brown & Bryant employee that was doing the unloading or whether it was a—the truck driver that was doing the unloading, is that reasonable?

A. Well, not every time.

Q. Not every time, but—

A. I have seen it, yes.

Q. And so you did see the truck drivers unloading these from time to time?

A. Yes.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 9
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Tuesday, April 13, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[1488]

GARY CHIRLIN,

called as a witness on behalf of the Plaintiffs, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name for the record.

THE WITNESS: Gary Richard Chirlin, C-H-I-R-L-I-N.

DIRECT EXAMINATION

BY MR. MacAYEAL:

Q. Dr. Chirlin, where are you employed?

A. At Chirlin & Associates, Incorporated, in Rockville, Maryland.

Q. What do you do there?

A. I'm a groundwater hydrologist and everything else, president and chief bottle washer and so on.

Q. And would you please summarize your educational background after high school for us.

A. I attended the Massachusetts Institute of Technology from '68 to February of '72 and obtained a degree, a Bachelor's degree in Earth and Planetary Sciences II.

Q. What was that all about?

A. Earth and Planetary Sciences Department was, at that time, administering the majors which were developed independently, and I developed a water pollution degree at a time when not many people were doing that.

* * *

[1521]

Q. And you've analyzed that as well, have you not?

A. I have. I have also added some hydraulic information, primarily in terms of emphasis of color rather than new colors.

Q. You added the colors?

A. Well, someone related to me did.

Q. And tell us what is the relevance of the subsurface, the nature of the subsurface to your analysis?

A. Well, certainly the first and most important feature of any groundwater system is the medium through which the groundwater flows, and that is a geologic medium. It's hardly ever the case that we have a sand box of uniform materials through which water flows in a straight line without any diversions or preferential paths of flow.

So it's necessary in this case and in many cases to understand what types of impediments to flow may exist in the subsurface, what the dimensions or scales might typically be of those impediments, what diversions of flow might occur as a result. And in this particular case, it has become an issue in terms of the pattern of soil contamination in the vadose zone.

Q. What role does the different permeabilities of the soils have for groundwater flow and contaminant transport?

A. It's really as you would expect. When the materials are coarser, such as sands or sands and gravels, the flow is attracted to those areas because less energy is expended getting from point A to point B if you go through a very [1522] permeable zone. On the other hand, if there is a silt or a clay, a fine material in the way, it will tend not to go through that. Most of the flow will tend to divert around that if there is an avenue for such a diversion.

So we can't characterize at the scale of a, say, a core, five-inch or two-inch diameter core, we can't characterize what the true distribution of sands and silts and clays might be, but we certainly can get a feeling from looking at multiple cores whether the system is irregular or regular. And as you have heard over again, this is an inhomogeneous or heterogeneous setting.

Q. Do the different types of soils have any impact on how contaminants bind to those particular soils?

A. Yes, yes. Some soils have a greater affinity for contaminants than others. So, in particular, I think at this site, I think you would tend to find contamination in the clays to a greater extent than in the sands.

Q. Do they have a greater tendency to absorb the contaminant?

A. Right, it's a sorption process.

Q. Is then based on the differences in the types of soils, what type of pattern do you expect on the groundwater flow?

A. Well, are you speaking of the vadose zone now?

Q. Yes.

A. The unsaturated zone. I would expect the flow from the surface would tend to take a circuitous route moving through [1523] the zones of preferential flow where slightly coarser materials exist.

Q. And these areas of higher groundwater flow, do they have any greater tendency to dissolve any contaminants that may remain in those particular areas from heightened groundwater flow?

A. Well, if there is still some contamination in a sandier material, it will be more available to flow than, say, the same contamination in a clay material, because the amount of water to get by is greater and the absorptive strength is less.

Q. Based on your experience, then, do you typically find a pattern of soil contamination that is, so to speak, straight down a column for volatile organic compounds?

MR. LASATER: Objection. Lack of foundation as to what is typical or that he knows.

MR. MacAYEAL: Let me lay a foundation.

THE COURT: Objection is sustained.

BY MR. MacAYEAL:

Q. Have you ever had any experience dealing with investigations of volatile organic contaminants?

A. Yes.

Q. At other sites?

A. Yes.

Q. And you have studied them?

A. Yes. Most of the sites I have dealt with have been on [1524] volatile organics.

Q. Have you seen any pattern emerge as far as the distribution of contaminants in the subsurface?

MR. LASATER: Same objection. Lack of foundation as to well, first of all, it's vague as to what he means by "pattern" and then lack of foundation.

THE COURT: I have just understood the doctor to say that he has studied the distribution of volatile organic contaminants at sites under investigation and now he's asked whether he has observed, and I assume it's in those observations that he's referred to, any pattern regarding the distribution of it's true the word "contaminants" rather than "volatile organic contaminants" was used.

And, therefore, we will ask if you intended to refer to any contaminants or volatile organic?

BY MR. MacAYEAL:

Q. I meant volatiles. Could you limit your answer to volatile, volatile organic compounds?

A. Yes.

Q. Have you seen any particular pattern as far as distribution?

A. Other than the pattern I just referred to where a contamination tends to be found in the finer materials rather than to a greater extent than coarser materials, it's very site specific. If areas where there is a large source, for [1525] instance, you would tend to find a more continuous pattern of contamination which doesn't represent migration straight down from the surface to each one of those vertical sampling points, but quite likely represents contamination that began at different locations on the surface and happened to wend its way down from one location to another to those vertical sampling points in your straight line down. And as sources get smaller and as contamination concentrations get less, the patterns become a lot more irregular, and that happens for a lot of reasons, some having to do with passing above and below the detection limit so what looks like a missing piece of contamination is just contamination at a level below the detection limit of your analytical limit or it could happen because the materials really aren't there.

Q. Now, with respect to the location of particular sampling points, have you had occasion to analyze the location of any Kennedy/Jenks sampling points, particularly at 16-A and CA-16 and CA-19?

A. Yes.

Q. For the record, this image is G-106.15.

What was the issue, as you understood it, with respect to the sampling points?

A. My understanding is the defendants—the defendants' contractor, Kennedy/Jenks, placed some shallow borings, two shallow borings in what they intended to be close proximity to

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IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 11
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Thursday, April 15, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

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[1831]

* * *

GARY LEARY,

called as a witness on behalf of the Plaintiffs, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name.

MR. MacAYEAL: Judge, Mr. Leary had a hip [1832] replacement. He may need to stand up from time to time.

THE COURT: If you need to take a recess, tell us.

THE WITNESS: As long as I stretch it out.

THE CLERK: Please state your name for the record and spell your last name.

THE WITNESS: Gary Joe Leary, L-E-A-R-Y.

THE CLERK: Thank you.

DIRECT EXAMINATION

* * *

[1838]

Q. Did you ever have occasion to see a trucker filling up the D-D tank?

A. I saw a number of trucks at different times unloading in that area. I mean you could always kind of smell the material, so you didn't know if it was coming from that truck or, you know, one someplace else.

Q. Well, do you recall—are you familiar with the smell of D-D?

A. Yes.

Q. Do you recall that from having been out at the Arvin plant?

A. Yes, it was many years ago, but you never forget that smell.

Q. And you had occasion to observe the types of trucks that were making the D-D deliveries?

A. Yes.

Q. Were they the same type of trucks that you were using for your fertilizer?

A. Yes.

Q. Now, could you describe I want to take you back do you recall a time period when the so-called "quick connect cam-lock" came into existence?

A. Yes, in the late 70's.

Q. And I'm trying to direct your attention to before that time.

A. Yes. [1839]

Q. Could you describe for us the procedure for filling up a tank during this time before the quick connect?

THE COURT: Which tank?

MR. EARLE:: Objection, the question is vague.

THE COURT: Yes, fill up the tank on his truck or the tank at the site?

MR. MacAYEAL: At the Brown & Bryant facility in Arvin.

MR. EARLE:: I would then object on the grounds of relevance, because there is no foundation shown that the unloading of fertilizer into an above-ground storage tank is the same procedure followed to unload pesticide into an above-ground storage tank.

MR. MacAYEAL: Judge, if I can try and establish that foundation, I will attempt to show how he did it for the fertilizer and to establish that it was the same.

THE COURT: You may.

MR. MacAYEAL: All right.

BY MR. MacAYEAL:

Q. Directing your attention to the process of filling up a tank at the Brown & Bryant facility, and I'm talking about fertilizer, correct?

A. Yes.

Q. Could you please describe how that process

was accomplished. [1840]

A. The trucks had a pump mounted on them, and it was normally operated by a PTO unit, "power take-off." It would be plumbed into the tank or plumbed to where you could hook a hose to the tank, the truck tank which would accept the material. You hooked another hose from the pump to the discharge point, or the tank that you were unloading into. Those, in the early days, were threaded fittings. The tank that you were pumping into normally had a male threaded fitting. The hoses had female threaded fittings and in the end of those threaded fittings was a gasket.

Q. Would you describe what a gasket is?

A. A gasket is a rubber material that fits inside the fitting, the threaded fitting that is supposed to stop leaks.

Q. Okay. And how did it work?

THE COURT: And before you ask that question, to which tank was the hose attached? To the truck tank or to the receiving tank?

THE WITNESS: It was attached to the receiving tank and it came from the pump on the truck.

THE COURT: All right. And so was the hose detachable at both ends or was it permanently affixed to one or the other of these tanks?

THE WITNESS: Attached at both ends.

THE COURT: And who was the, if you will, the owner of the hose? [1841]

THE WITNESS: Normally the trucking company.

THE COURT: Thank you.

You may proceed.

BY MR. MacAYEAL:

Q. Now, so you would attach the hose at the

pump?

A. That's correct.

Q. And then attach it at the tank that you are trying to fill up?

A. Right.

MR. EARLE:: Again, your Honor, an objection on relevance. I think we are talking about a fertilizer.

THE COURT: Well, I can't tell yet and so I'm going to permit his attempt to lay the foundation and I will make a decision.

MR. EARLE:: I would like to voir dire this witness and ask him if he's ever delivered D-D.

THE COURT: As I understand it, the foundation that is being offered by the government is that the witness observed the offloading of D-D at Brown & Bryant Arvin with sufficient power of observation and precision to be able to describe it. That would be a potentially suitable foundation. I can't know that until I hear it.

And so I'm not going to let him speculate, but why don't you wait until we have attempted through Mr. MacAyeal for the foundation to be laid. Then I will let you voir dire. **[1842]**

MR. MacAYEAL: And just for the to make sure it's all okay with the Court, I'm going to have him describe how it was done with the fertilizer tank and then if it was the same with D-D.

THE COURT: Yes.

BY MR. MacAYEAL:

Q. Were there gaskets at both ends of the hose?

A. Yes.

Q. And, again, the gasket is what is it, it was a rubber seal?

A. Yes, it was a rubber seal. Look at a garden hose and the little rubber gasket that goes in the female end of the garden hose that screws up against the faucet to stop the water leak. Same type of arrangement.

Q. All right. So you would connect the hose at both ends?

A. That's correct.

Q. And then turn on—what happened next?

A. Then you would turn on the pump, engage the PTO unit on the truck, and open the valve that controlled the material coming out of the truck tank and allow it to flow to the pump and be pumped off.

Q. Now, did you ever observe any leaks in this process?

A. It was not uncommon to have leaks at the gaskets, and at the packing, in the power or in the pumps themselves, and you would have to tighten this up from time to time to stop it from [1843] leaking, and I want to say probably every load you would have a drip or two that you had to tighten up and then you had to change the packing in these pumps quite often.

Q. Did you carry any gaskets with you in your truck?

A. Yes.

Q. What was the reason for that?

A. Because the gaskets would wear out pretty rapidly.

Q. Did you ever have occasion to use a bucket?

A. Put a bucket under each one of the fittings.

Q. What was the reason?

A. To normally catch the drips.

Q. All right.

A. And when you would finish the unloading process, you would disconnect the hoses and there was always a little residual material left in the hose and you would drain it back into the bucket.

Q. Describe how that happened.

A. Well, normally you would disconnect at the truck head and lay the hosc

If I may?

THE COURT: Yes, you may.

THE WITNESS: If you have a hose and it's kind of flexible and it lays down on the ground, you would hang it on the edge of the bucket and then start back at the far end of the hose and lift it up and allow the material to drain down [1841] and towards the bucket. And it's as you got closer to the bucket, you were here, the bucket sometimes gets unstable and is on rough ground and it would tip over.

BY MR. MacAYEAL:

Q. Would the contents spill?

A. And it would spill, or if you had too much material in the hose for what was in the bucket and you would run it over.

Q. The bucket would overflow?

A. Yes.

Q. Now, was there a tank at Brown & Bryant that had a pump on it, on the tank?

A. Yes, the UN-32 tank had a large pump on it. And you really liked to unload there because it would unload you very much quicker than your own pump and it would suck the lines pretty clean.

Q. In that situation, was there less likelihood of a spill?

A. Yes, because you could break it didn't have to go through the pump and you could break it loose at the tank, close the valves, break the fitting loose and it would allow a little air to come in it and then you could lift the hose up and work it towards the pump and it would suck it out.

Q. Now, in the occasion when you were using the bucket, though, was there ever a time when you would take the hose and throw it on the ground?

A. Normally, when you finished unloading and if you tried to [1845] get everything you could into the bucket, you would toss it on the ground. All of the tanks had hose tubes on them, the tanker trucks had hose tubes on them, and you would lift up one end of the hose, place it into the hose tube and feed it into the hose tube, which was a carrying tube for the hose.

Q. And would any spills occur in connection with that?

A. A little residue would probably drip out of the hose from time to time.

MR. EARLE:: Your Honor, I would like to make an objection and ask the witness to pause a moment before answering questions. It's obvious that he's got quite a rapport going here with Mr. MacAyeal, but I don't have an opportunity to object, and two questions ago I wanted to raise an objection the question was leading and I now move to strike that testimony because, in fact, it was leading.

THE COURT: All right. If you would, please, Mr. Leary, count a thousand one before you answer after the question is asked. That will give anybody a chance, if they want to object.

THE WITNESS: All right.

THE COURT: I will grant the motion to strike the answer and I believe that referred to what was done when the hose was being reinserted in the hose tube for storage, so that was the answer I have stricken.

BY MR. MacAYEAL: [1846]

Q. Mr. Leary, you testified about the bucket, correct?

A. Yes.

Q. Were there ever any other instances where leaks occurred in the process of filling up a tank?

A. From time to time, like I said before, the pumps leak. The packing on the pumps. The gaskets in the hoses. If you tipped over a bucket, you would spill what material was in it or if you put too much material out of your hose, had too much in the hose and dumped it into the bucket, it would overflow.

Q. What about putting the hose up in the hose tube?

A. When you would toss the hose down on the ground, the hose tube was built on to the side of the tanker truck. You would pick up one end of it and feed it into the hose tube and continue to feed it in until it was completely inside the hose tube. As it hangs down on one end, any material or residue that's left in the hose would drip down and drip out on the ground.

Q. Do you remember seeing that?

A. Yes.

Q. Now, you said you had occasion to see it. Do you remember the distinctive smell of D-D?

A. Yes.

Q. And you had occasion to observe that the D-D by the way, let me back up. Did you fill up a lot of the tanks in the tank farm area of Brown & Bryant

with fertilizer? [1847]

A. Yes.

Q. And did you have some familiarity with what the tanks, what the various tanks were used for?

A. Yes.

Q. Okay. And you recall the D-D tank?

A. Yes.

Q. And you recall do you recall the distinctive smell of D-D?

A. Yes.

Q. Now, do you remember ever having observed any tanker trucks filling up the D-D tank?

A. Yes.

Q. Okay. Did they use a procedure similar to the one that you used?

MR. EARLE: Objection. The question is vague and ambiguous with respect to the word "similar."

THE COURT: All right. If you would, tell us your best estimate on how often you observed the filling on site of the D-D tank.

THE WITNESS: Two or three times.

THE COURT: All right. And can you describe what you observed with respect to filling the D-D tank on those occasions?

THE WITNESS: The equipment was similar or exactly like I used on my equipment and the procedure would have been [1848] exactly the same. Thc they had a pump on the truck. They pumped from the truck through the pump through a delivery hose into the tank. There were buckets that sat there for drips. When they finished—I mean not seeing it or exactly knowing what they did, I would estimate that therc

THE COURT: Don't estimate if you didn't see it.

THE WITNESS: Okay.

BY MR. MacAYEAL:

Q. You were in the trucking business during this time period?

A. Yes.

Q. You had familiarity with the types of trucks that were used?

A. Yes.

Q. And you were familiar with the type of you saw these D-D delivery trucks?

A. Right.

Q. You were familiar with them?

A. Yes.

Q. They were basically the same type of equipment you used?

A. That's correct.

Q. And do you recall seeing buckets for those D-D deliveries?

A. Yes.

MR. EARLE: Question is leading.

THE COURT: He's already so testified.

* * *

[1862]

* * *

CROSS-EXAMINATION

BY MR. EARLE:

Q. Mr. Leary, we have met before at your deposition in Bakersfield; do you recall that?

A. Yes.

Q. You began your testimony this afternoon by talking about a an employment pursuant to which you drove an oil truck and oiled the Brown & Bryant yard, and I think I heard you say—I think I heard you contrast putting that oil down on the yard, which was a penetrating oil, with an asphalt surface, was that correct? Did I hear correct?

A. No. No. It was a mixture of fuel oil and gas oil and they called it "dust binder" and that was all that was put on. There was never any asphalt, to my knowledge, added to the Brown & Bryant facility.

Q. Okay. When you put this oil on the Brown & Bryant yard—

A. Right.

Q. did it create a surface that in any way resembled asphalt?

A. No.

Q. Did it create a surface that was in any way nonporous [1863] because of the oil on it?

A. No.

Q. Did you ever see rainwater on that surface after it had been oiled?

A. Not after it had been oiled.

Q. Okay. But I guess, based on your testimony, you would not have expected rainwater to run off on that surface like it would run off on asphalt?

A. Well, that was the reason it was put on, so it would run off.

Q. Would it run off to the extent that it would run off of asphalt?

A. Probably not as much as it would run off of asphalt, but it would definitely run, and the way the yard was graded, it was graded to run anyway.

* * *

[1872]

* * *

Q. Okay. So you testified earlier that you didn't know that Brown & Bryant had a pump as early as 1976 on the D-D tank, so I suspect that you didn't know back when you were delivering fertilizer to Brown & Bryant whether or not any buckets they had in the area of the tank farm were for the D-D tank or some other tank; isn't that right?

A. That's correct.

Q. As you sit here today, you do not have a specific recollection of observing a D-D delivery to the Brown & Bryant Arvin above-ground storage tank which utilized a bucket, do you?

A. Everything that was hauled to Brown & Bryant between the years of 1974 and probably 1980 that was not that Brown & Bryant ordered or Brown & Bryant paid the freight on, Mitchell West hauled, so anything—any other trucks that ever came into that facility were being shipped by someone else.

I don't I mean as far as the buckets are concerned, there may have been a bucket, there may not have [1873] been, but there were buckets all over the facility to stop drips.

Q. But you don't recall that being the method employed by anybody delivering D-D to that facility, do you?

A. That a bucket was used?

Q. Yes.

A. Well, when Rainbow there were Rainbow trucks and there were other trucks in there. "Matlack"

I believe was another name. Whenever they unloaded, they used buckets just like everyone else.

Q. Mr. Leary, you testified earlier today that the placement of the offloading pump next to the tank facility, the above-ground storage tank facility, facilitated getting the product into the tank without spilling it because it allowed you to get the product out of the hose; do you recall that testimony?

A. That's correct.

Q. Now, if you utilized a—the pump at the above-ground storage tank, would it be necessary to utilize the bucket?

A. Yes.

Q. Okay. And why would it be necessary in that situation to utilize the bucket?

A. Because nine times out of ten, the gaskets are going to leak.

Q. Why are the gaskets going to leak, Mr. Leary? [1874]

A. Because the material they are hauling is a very corrosive material and it eats gaskets up.

Q. On what frequency basis?

A. You know, that's hard to say.

Q. Did you carry extra gaskets?

A. Certainly.

Q. Did you inspect the gaskets before you hooked them up?

A. Not normally.

Q. Why not?

A. Well, you just, if you had used them once before and they weren't leaking, you hooked up and you started the unit. If you leaked, they shut it down

and changed the gasket.

Q. That was your standard operating procedures?

A. That was most of the standards in the industry.

Q. That's not the question I asked you, Mr. Leary. I asked you if it was your standard operating procedure.

A. Yes.

Q. The fertilizers you were hauling were considered toxic, were they not?

A. Your definition of "toxic"?

Q. Were they subject to special regulations in the hauling?

A. No.

Q. They were not?

A. No.

Q. The two occasions that you hauled pesticides, were those [1875] pesticides subject to special regulations?

A. Yes, they were.

Q. And who promulgated those regulations?

A. They were placarded at the loading facilities.

Q. Do you know whose regulations they were?

A. The Department of Transportation.

Q. Do you recall the substance of those regulations?

A. Not verbatim.

Q. Can you tell me in general what they were?

A. No. I mean, not right offhand.

Q. Isn't it true, sir, that some of those regulations dealt with the safe unloading of those products?

A. Well, any product you hauled deals with safe

unloading of it, whether it be a package of toilet paper.

Q. And the fact of the matter is, as an independent carrier, sir, you were supposed to exercise your best ability not to spill product in the unloading process; isn't that right?

A. That's correct.

Q. Now, you testified about this oiled surface at Brown & Bryant.

A. Yes.

Q. Was that oiled surface there as long as you were familiar with the Brown & Bryant facility?

A. Yes.

Q. How about in the area of the tanks? [1876]

A. Describe "area of the tanks."

Q. The area—

A. Between the tanks?

Q. Between the tanks.

A. No.

Q. What was between the tanks?

A. Gravel.

Q. And for what period of time?

A. Forever, that I can remember.

Q. Okay. You talked about the UN-32 tank and you talked about what a dream it was to unload into that tank because the pump was right there at the side of the tank.

A. Right.

Q. I take it you still used a bucket when you unloaded at the UN-32 tank?

A. That's right.

Q. When you unhooked your hose after unloading the pump at the side of the above-ground storage tank,

how much product spilled into that bucket?

A. Oh, there would be a couple of drips and then you break the hose loose a little bit and build up a vacuum and it would suck it right into the pump.

Q. So in other words, a couple of drips?

A. Yes.

Q. And "drip," you are talking about less than an ounce? [1877]

A. You know, a half an ounce, an ounce.

Q. Okay. And tell me, sir, was it possible, even without the pump at the above-ground storage tank, utilizing the pump and the power takeoff on your truck, it was possible to walk that hose and not spill product, wasn't it?

A. Possible, but not probable.

Q. Did you ever ask anybody else to help you to hold the bucket?

A. No.

Q. Why not?

A. Because everybody else had their own jobs to do. They were busy. We were hired to haul the material, and that was it.

Q. And one of your jobs was to haul it and not spill it; is that correct?

A. That's correct.

Q. Did you ever think about suggesting that any of the distributors that you delivered to put in a concrete pad with a little lip on it so that anything that spilled wouldn't go to the ground?

A. No.

Q. Brown & Bryant never did that, did they?

A. Not that I'm aware of.

Q. If they did that, they wouldn't have spilled anything in their unloading process, would they?

A. Not that I'm aware of. [1878]

Q. When is the last time you talked to Jack Brown?

A. Probably a year ago.

Q. You didn't see him last week?

A. No.

MR. EARLE:: If I could, I would like to consult with my co-counsel for a moment.

THE COURT: Yes, you may.

(Discussion off the record.)

MR. EARLE:: No further questions, your Honor.

THE COURT: Anything further, Mr. MacAyeal?

MR. MacAYEAL: Yes, your Honor.

REDIRECT EXAMINATION

BY MR. MacAYEAL:

Q. Mr. Leary, when you were delivering the product, were you trying to get the job done quickly?

A. Yes.

Q. Did you have other loads to go pick up?

A. Yes.

Q. So was it a situation where time was money?

A. That's correct.

MR. EARLE:: Objection, leading.

THE COURT: The objection is sustained.

BY MR. MacAYEAL:

Q. When you delivered at Brown & Bryant, did Brown & Bryant tell you how to do it? [1879]

A. They pointed the tank out and said, "There it is, go unload."

Q. And the—were you working for the person the company that was trying to get the product delivered?

A. Right.

MR. EARLE:: Objection, question is leading.

THE COURT: Sustained by.

BY MR. MacAYEAL:

Q. Who were you working for?

A. I personally was working for Mitchell West Trucking. Mitchell West was contracted or not contracted, but they were ordered out by whoever was shipping the material.

Q. Now, was it your practice, if you received instructions from that company that was arranging for the delivery, to follow those instructions?

A. No.

Q. Well, did they give you would you receive instructions?

A. They would tell you that, you know, deliver the material here, and that was basically it. When you arrived at a site, you would ask, you know, "Where is the tank," and they would point out the tank and you would go hook up to it and unload.

Q. That was for the fertilizer?

A. That's correct.

* * *

[1886]

* * *

RECROSS-EXAMINATION

BY MR. EARLE::

Q. Isn't it true, Mr. Leary, that if a trucker

carefully walks the hose after the delivery, whether the pump utilizes at the above-ground storage tank or at the truck tank, the hose is carefully walked and the bucket is watched, you can unload a liquid product into the above-ground storage tank without spilling a drop of it? [1887]

A. Probably.

Q. And isn't it true that if the owner of the facility put in a concrete pad in the delivery area with a lip on it that even if a bucket were tipped over, you could prevent any product from reaching a place where it could go to ground?

A. If you had impermeable surface, certainly.

Q. And isn't it true that through the use of dripless couplers you can further reduce the amount of any spill that you are going to have to collect in a bucket?

A. Dripless couplers?

Q. Yes.

A. I'm not familiar with that terminology.

Q. Are you familiar with dry disconnect couplers?

A. Oh, I'm sorry, yes.

Q. And isn't it true through the use of dry disconnect couplers that you can reduce the amount that's going to fall into the bucket to literally drops?

A. I would suspect so, yes.

Q. And again, as a truck—as an independent trucker, it was your duty to utilize whatever methods you could employ to make sure you didn't spill anything; isn't that right?

A. That's correct.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 14
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Wednesday, April 21, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[2169]

* * *

WILLIAM HAVERLAND,

called as a witness on behalf of the Defendant Shell, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name for the record.

THE WITNESS: William H. Haverland, H-A-V-E-R-L-A-N-D.

THE COURT: You may proceed. [2170]

DIRECT EXAMINATION

* * *

[2207]

* * *

BY MR. HELDT:

Q. The transportation was done by common carrier; is that right?

A. That's correct.

Q. Once the common carrier arrived at a distributor facility, what were the typical arrangements then for the unloading of the product?

MR. MacAYEAL: I guess here we at a minimum, we need to have a time frame on it, because he only was the D-D sales manager in 1980. But I guess

THE COURT: From '80 to '81.

MR. MacAYEAL: '80 to '81.

THE COURT: And he was in the field as well. I don't know whether he was in Indiana and northern Kentucky, I don't know whether that was a bulk sales type of distribution area or [2208] not.

Mr. Lasater has arisen.

MR. HELDT: Your Honor, I think perhaps it's worth mentioning at this point in time that Superfund is a very peculiar animal. It's one in which there's no statute of limitations, and so it's always a struggle for all of the parties to bring specific personal knowledge to an incident which occurred way back in 1976, which makes it almost unique in cases. Mr. MacAyeal

THE COURT: Well, we have somewhat of a trail, because we know that there's a bulk storage facility, we know that a common carrier is being used, we have some invoices which give us the kind of trail that would be foundationally sufficient to explain what was happening. Here, however, what is done at the distributor's facility, particularly if it's by the distributor, I wouldn't especially expect the national product manager to know. I mean, if he does, he can say so.

THE WITNESS: I know the wording was that we deliver FOB customer's facility, not FOB customer's tank, and there's a difference there.

THE COURT: What is that difference?

THE WITNESS: The difference is we have stewardship of that product across the road to the time it reaches the customer's facility. They take stewardship upon the common carrier arriving at their facility and it's theirs at that [2209] point and then they move it into the tank.

THE COURT: So when you say you can make your objection and then I'll ask one more question.

MR. MacAYEAL: I just move to strike because he's stating an opinion, a legal conclusion, it sounds like.

THE COURT: Well, actually, I think that he was very cautious in using the word "stewardship." That isn't so much of a legal opinion. He hasn't mentioned title at all.

What he is, I think, expressing is a matter of intent, and the seller can state its intent. Whether or not that's the legal fact is a different question. But, in other words, the seller can say, "We deliver to a common carrier with the instruction and our invoice

provides that this is FOB shipping point or it's FOB destination. And when we say FOB destination, we mean when it leaves the highway and it turns into your driveway, it's your product." Stewardship doesn't necessarily say legal title, but what it does say is, "You handle it now."

Is that—

THE WITNESS: That's correct.

THE COURT: —what Shell intended?

THE WITNESS: Yes.

BY MR. HELDT:

Q. To try to shed some more light on this particular issue, was there a particular custom and practice concerning documents **[2210]** that would be exchanged between the distributor and Shell that would be typical from transaction to transaction in which the distributor would order D-D and the manufacturer, in this instance Shell, would confirm the order and then documents for shipping produced and then invoices?

A. Yeah, there was

MR. MacAYEAL: Excuse me, Judge. If we can just get him to say, "I've seen these documents before and I have a base to say what's typical" rather than just launching into the conclusion.

THE COURT: All right. Can you state whether or not you had seen the documents that are used in the distribution chain before?

THE WITNESS: Yes, I have.

THE COURT: All right. Then you may answer this question.

THE WITNESS: Yeah, there was a procedure that was to be followed where the customer placed an order

at the order center. The order center would issue an acknowledgment of that order and a release to the San Pedro terminal that there was going to be a shipment of bulk D-D to the customer.

The common carrier would be ordered, would go in, pick up the product. They would weigh in to get the tare weight of the truck, that's the way bulk commodities are moved, they would fill it up, they would weigh on the way back out, [2211] and they deduct the tare weight from the gross weight and that gives the net weight of the product, and that's what is shipped and shown on the bill of lading. And the bill of lading is used for the issuance of the invoice based on the weight of that bill of lading.

MR. HELDT: I'd like to direct your attention to Exhibit 1199. That would be under Tab B, Bill.

I think there are no objections to this being received into evidence.

THE COURT: You probably need to move them in if they're not joint exhibits as you're going, Mr. Heldt.

MR. HELDT: 1199 is in evidence.

BY MR. HELDT:

Q. First of all, page 1 of Exhibit 1199, is this typical of a purchase order that would be utilized in order to order D-D in bulk?

A. Yeah. Every customer would probably have their own version of their purchase order, but that would be typical, yes.

Q. This particular invoice, Plaintiff's Exhibit 1199, has a column called "Quantity" and then it has a notation "1" space "T/L." Do you see that?

A. Yes.

Q. What did that mean in the industry, typically?

A. Truckload.

Q. One truckload. Would that have a standard quantity in the [2212] industry?

A. It would have an approximate quantity. You would typically load the trucks to 5,000 gallons.

Q. Five thousand gallons.

I'd like to direct your attention to the second page as I have it. I'm not positive that in all of the exhibit books this will be the second page, but it has the microfilm number 2902 on the margin.

This has a Shell peckton. First of all, what's a peckton?

A. It's a Shell logo.

Q. What is this particular form?

A. It's an order acknowledgment showing that Brown & Bryant ordered from San Pedro to be shipped to them a truckload of D-D.

Q. What is the purpose of the order acknowledgment?

A. It releases the product from thc it gives authorizes the terminal to release the product to the carrier.

Q. Does it quote a price?

A. Yes.

Q. This particular invoice is somewhat difficult to read, does it appear to be $2.07 a gallon?

A. Yes.

Q. I note that it says freight is prepaid, what does that typically mean? [2213]

A. That means that Shell paid the common carrier for the freight to take it from San Pedro to Arvin.

* * *

[2228]

Q. On the next page, which is microfilm number 1164, we have that same form, which is the order acknowledgment; is that right?

A. That's correct.

Q. This form appears to be slightly different as far as the line items on the form than Exhibit 1199. What are those differences that we can pick up from the middle of the document?

A. Well, the difference is, for one, the price is different and, number two, is there's a less fall fumigation promotional allowance of 3 cents per gallon.

Q. What does this mean, then, as the total price of the D-D Soil Fumigant considering the price of $2.58 a gallon and then the promotional allowance of 3 cents a gallon?

A. The net price the customer would pay would be $2.58.

Q. Are promotional allowances something that you were generally familiar with in the context of your employment in the agricultural chemical Shell business?

A. Yes. They were typical in not only the D-D product line, but other products within our line. Essentially, what it is is once you establish once we established our list price, we wanted to maintain the integrity of that list price. If for some reason we had to meet some kind of a competitive offering from another supplier, we typically would do it in the form of a promotional allowance, temporary allowance, something like [2229] that.

Q. And

A. Much the same as a car dealer that maintains

their sticker price on the window and the manufacturer gives a thousand dollar rebate.

Q. And this would be an example of that kind of promotional allowance?

A. That's correct.

Q. On the third page, which has the microfilm number 1163, this again is the—shows down at the bottom the quantity of freight out; is that right?

A. That's correct.

Q. In this instance, it's more than 5,000 gallons; is that right?

A. Yes.

Q. In fact, it's 5,054 gallons.

A. That's correct.

Q. On the next page, this is a largely unintelligible truck ticket similar to the Gray Truck ticket?

A. Yes.

Q. And the carrier in this instance was Allen Transportation Company, I guess?

A. Yes.

Q. Looking at the last page of this document, this is the invoice front that we had that is similar to the invoice [2230] front on the Exhibit 1199?

A. Yes.

Q. And it contains, then, an invoice for an amount of 5,054 gallons. Does that indicate to you, then, that the entire amount that left the San Pedro terminal was invoiced to

A. Yes, it was.

Q. Brown & Bryant? In other words, they paid for everything that left the terminal?

A. They were invoiced and paid for 5,054 gallons.

Q. They received, however, a cash discount which would lower the price per gallon price?

A. Not a cash discount, a promotional discount. A cash discount is typically when you pay your bill within a specified period of time you can get a cash discount. This is a promotional discount.

Q. That, then, is an example of a promotional allowance. And I'd like to direct your attention next to Exhibit 1271. Again, in 1271—

MR. LASATER: Can you hold on for a second. I have to change notebooks.

BY MR. HELDT:

Q. 1271, first page we have an order for a trailer load again?

A. That's correct.

Q. This was in 1980, it appears.

The second page, the order acknowledgment, it [2231] shows I can't read the price, but it shows a comp allowance. What is a comp allowance as opposed to a professional allowance?

A. That's abbreviation for "competitive allowance."

Q. And what does that mean?

A. Again, that's something price, meeting some competitive offer that they received from another supplier.

Q. We have a truck ticket, or a weigh ticket, I suppose, from GATX.

Then we have the ticket which shows the quantities shipped again, that's the document number 1185, and it shows quantity of less than 5,000 gallons that was actually put into the tanker at San Pedro; is that right?

A. That's correct.

Q. The quantity being 4894 gallons?

A. Yeah.

And it may be worth mentioning in these type of bulk shipments, product is not metered in the truck. If it were metered in the truck, you could put in 5,000 gallons, but it's all done by weight. There is no metering of this material.

Q. We have a third common carrier here, it appears L & L Tank Lines; is that right?

A. Yes.

Q. And then we have the invoice. We just established that 4894 got shipped. The quantity that was actually invoiced [2232] corresponds to that exactly, 4894.

A. That's correct.

Q. And it shows then a reduction it's a little clearer now. $2.58 a gallon was reduced to 5 cents a gallon in order to get a total bill of 1,230 excuse me.

A. $12,381.82.

Q. Right.

Now, then, if we can go to Exhibit 1217 to look at a different type of allowance. Exhibit 1217, an order from Brown & Bryant, July 11, 1978. Again, it's for one trailer load; is that right?

A. That's correct.

Q. On this next page, which has microfilm number 3360, it shows a price, I believe, of $2.40 a gallon; is that right?

A. That's what it looks like to me, yes.

Q. And then we have a separate line item, which is called "Less evaporation allowance," and that's stated in kind of mixed terms there. It has a dollar sign and it has a "0.01," but then it has a percent rather than gallon; is that right?

A. Yes.

Q. What was this evaporation allowance?

A. Evaporation allowance is, again, something to just reduce the price from the list while maintaining the integrity of the list price rather than dropping it by two and a half cents a gallon. **[2233]**

Q. Would competitors from time to time offer things such as a evaporation allowance?

A. Yeah, you would the industry was typical to offer different types of allowances, call them different things, but, essentially, it was to adjust the price, try to get a competitive edge or meet a competitor, one of the two.

Q. Then the next page, again, is a truck ticket again. Skip that page. And the next page, this appears to be Allen Transportation again, and go to microfilm number 3359. That shows us the quantity leaving San Pedro terminal again; is that right?

A. That's correct, 4,954 gallons.

Q. 4,954. And if we go to the next page, which has the microfilm number on it, which is 3361, how many gallons then were invoiced to Brown & Bryant?

A. 4,95 and I think that's a 4.

Q. It appears to me also to be 4,954.

Assuming that is what that says, that corresponds, then, with the 4,954 that left the GATX terminal; is that right?

A. That's correct.

Q. In other words, even with this evaporation allowance on the invoice, Brown & Bryant paid for everything that left the GATX terminal; is that right?

A. That's correct.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 18
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Wednesday, April 28, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[2860]

* * *

JOHN CONNOR,

called as a witness on behalf of the Defendant Shell, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name.

THE WITNESS: My name is John Connor. Last name is spelled C-O-N-N-O-R.

THE CLERK: Thank you.

DIRECT EXAMINATION

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 19
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Thursday, April 29, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

[Direct Examination of John Connor continued]

* * *

[2982]

* * *

Q. Is there any source of focused infiltration that you noticed from the topography of the tank area?

A. The testimony and the available record indicate that we do not have pavement at the tanks.

Q. What about some big roof that would be directing all the rain right there onto the spot where the unloading occurs?

A. There is no indication of any such of a source of runoff in that area either, and this is just oiled soil. It's a very imperfect surface by its own right. It's more flaws than not flaws. It's oiled dirt. [2983]

Thc at this point, I would like to comment on the .04 inch rainfall.

Q. Okay. Go ahead. What do you think about the validity of using that .04 inch rainfall as the standard for a runoff event and what is more appropriate?

A. The .04 inch rainfall number was derived from the TR-55 method of runoff analysis that is published by the U.S. Soil Conservation Survey. It is, frankly, the most common method for estimating surface runoff, and in Dr. Walton's document, he indicates that he did use this. TR-55 is variably called the SCS method, sometimes called the curve number method.

In Dr. Walton's report, he characterized the surface soil as a paved parking lot with roofs and driveways paved, meaning concrete or asphalt, and he used the highest curve number that's in the SCS method, he used a 98. These numbers only range from areas from numbers around 40 up to a hundred theoretically, and the highest number on the curve is 98. The higher the number, the less initial rainfall required to initiate runoff.

Dr. Walton ran this calculation and came up with a millimeter of rainfall. If you actually look at the type of soil we have in the vicinity of the tanks, which is dirt, you know, on this list, there is dirt, there it is, dirt, including right-of-way, you know, such as somebody driving on it, and I took the dirt number, which is 82,

and I applied I made it [2984] higher.

I said, well, let's say this is a commercial business, 98, average it, use 87, the answer is .3 inches, .3 inches of rainfall required to cause runoff at the Arvin site, not a millimeter. Think about it. Even

Q. Well, let's stick with equal units of measure. .3 inches versus .04 inches?

A. Yes.

Q. Go ahead.

A. That's a ratio of, what, eight times, and I also, rather than looking at binomial distributions or theoretical calculations, I pulled all the rainfall data for the Arvin site and pulled, for the last decade of the D-D tank operation, all the rainfall data. This is based on the Bakersfield weather station by the NOA Service. And if we look at that and say in that entire time, ten years, for a decade, how often do you get a rainfall over .3 inches? Well, it gets 70 times in ten years, 70 days where there could be a rainfall event.

Q. To put that in perspective, how many days in a decade, 3,600?

A. In that particular decade there is 3,652 because we have two leap years.

Q. 3,652 days?

A. Yes.

Q. There were 70 days in which you had [2985]

A. A rainfall event over .3 inches.

Q. That's what percentage?

A. It's under 2 percent. It's very small. This is a desert, remember. So how many times were there rainfall events that even caused runoff at the Arvin site? .2 percent of the time. So if you go out there on day one and you are saying, "Well, gee, I sure need

some rainfall to cause a runoff," chances are one or two days out of a hundred days you will actually see some rainfall movement. That's very different from saying that rainfall gets somewhere, okay?

Q. Okay. One other point I wanted to ask you about. We are not delivering D-D every day. Didn't wc we talked about 25 times a year in a busy year, 15 times in a slow year. Did you do any analysis to spread out the fact that you are only talking about 25 to 15 days a year in which there is the opportunity for it to coincide with a rainfall event? Did you do some analysis?

A. Yes.

Q. What was the results of that analysis?

A. That analysis indicates that on days—well, that there were rainfall events—and these are actual days, right, when there is a rainfall event above .3 inches. I'm looking at the rainfall record for the last decade, that would be 1973 through 1983, the last decade of D-D activity at the property.

You look at that analysis and we superimpose on that **[2986]** historical profile D-D deliveries. My understanding from the Shell information is that the rate of sales over that period of time would correspond to about 15 deliveries from '73 to '78 and 25 deliveries a year thereafter until 1983. If we superimpose that record, and if we assume just an even distribution of these deliveries over that time, that the number of days that coincide with an actual rainfall event are only one, or it rains from zero to a maximum of five days, if you depending on how you shift that delivery record.

So and most of the days it's the record very typically would come out with one day. One day out of 3,652 up to a maximum of five days, given, I don't know

exactly the days of delivery, would you have rain the same day that you had D-D delivered.

Q. All right. One day in a decade is the probability, then, analysis that we are going through. This may be a statement of the obvious, but it's a legal standard. That would be less likely than not; is that right?

A. Yes. That's a long time to wait for something to happen.

Q. Okay. But now we have had we don't know, maybe we have had a thimbleful spilled on that day, maybe we have had a gallon spilled on that day. Assuming we have one spill a decade on a day of a runoff event, what are the obstacles then that would mitigate the runoff to prevent it from getting to the sump and the pond which we have talked about being our [2987] bull's-eye that are the cause for contamination?

A. Well, there are a number of abstractions that would impede transport of that spill during a rain event. First, it's the volatilization of the spill. Dr. Deeley talked extensively about the volatile characteristics of the D-D product. We all recall that it is a soil fumigant. It's not called a soil leachant, it's called a soil fumigant because it vaporizes in the soil, so when you spill D-D, it tends to evaporate.

D-D's vapor pressure for 1,2-DCP is about half that of benzene. And benzene is one of the constituents we are most concerned about in gasoline, so let's think about that yourself. You go out in your driveway tonight. Pour out a gallon of gasoline, will it be there the next day? No, it won't.

Q. Will it be there in an hour?

A. There might be some left in an hour, but

normally it's gone. Now, D-D might it might volatilize a little bit faster it might volatilize a little bit slower than gasoline because it's made up of a lot of 1,2-DCP and gasoline doesn't have a lot of benzene in it. But think about that, would it be there the next day? No way. Would it be there in a couple of hours, it might be a stain, but, you know, that stuff probably is gone in an hour. And the analyses, if you model this, it's pretty much the answer that you do get.

So the first impedance is the volatilization of the [2988] spill itself. Secondly, is it will, you know, initially contact that soil or that oil, and it's—there it is. It's on the dirt. Now, it rains on that soil. It has to get into that now the stuff has to get off the soil and into the rainwater. That's partitioning, right? That's partitioning, and that's a very inefficient process.

You ever try to wash something off your driveway, you know it's not doesn't work so well. Say you had something spilled out there and it rains on it. Still there. You got to work pretty hard. You get some gasoline or D-D on your pants, put them in the washing machine, put it so it cycles one time, man, they are still going to smell pretty bad. The stuff doesn't come off very easily. It's a very inefficient process.

Put D-D in a jar of water, equal parts, just pour it in there. Does it dissolve? No. Make some chocolate milk. Put some Hershey's Syrup in a glass of milk, don't stir it. Does it dissolve? No, your kid would be a little bit upset if that's how you made his chocolate milk, with the good stuff at the bottom. It takes energy to dissolve. It dissolves very slowly, very slowly. So the second impedance is the partitioning process. These are relatively inefficient. So the rainwater will pick up very little.

Then the rainwater has to get all the way down to that pond. From the D-D tanks, if we look at the 1994 topographic surveys, it's something over 300 feet from that [2989] tank down to that pond. If we go as the crow flies, it's something over 200 feet down there. It's 230 feet or something like that. Let's assume that it was graded back in whenever, that it went straight, you know, there was a grade that went to the pond. Well now it has to get there. That spill, some large percentage of it volatilized, mostly. I think if you run the calculations, you will get 90 to 95 percent volatilization in that first day. Then some of it has to get in the rainwater, terribly inefficient process.

And now that rainwater has to get to that pond and it's got a pretty tough trip to make. It's got to exceed the initial abstraction so it causes runoff on each little block as it goes down there. Some of it gets caught in the soil. Some of it gets caught in footprints, some of it gets caught in a truck rut.

Earlier, we looked at the topographic survey, and it's pretty lumpy out there. So all of those things would impede significantly the progress of any droplet of water from my D-D spill plot, if I assume that it did indeed happen, from ever getting down into that pond, and that is a long trip for a drop of water, quite frankly.

Q. And along that trip I presume that it's still raining and so it's diluting that drop, right?

A. Yes.

Q. And along that trip, the ground is still you have to [2990] cross ground, that would cause it to infiltrate there as opposed to getting to the pond; is that right?

A. You will have some what's called storage under the SCS method refers to storage. Now,

storage, the actual storage capacity of that soil is five times larger than what's referred to as the initial abstraction.

How much rain does it take to cause runoff to happen? And I have said earlier, if you look at the actual surface soil at that site, it's .3 inches. How much storage capacity in the soil is there? Well, it's five times larger than that. It's 1.5 inches, so that's quite a gauntlet to run to get all the way down there. There is a lot of opportunity for that droplet to get lost, a five times opportunity for that droplet to get lost on the way there.

Q. More likely than not?

A. Oh, infinitely more likely than not that it can't get there.

Q. All right. So let's assume, then, that we have this site, these conditions and site history, but this site is only the bulk storage tanks. It doesn't have the dinoseb spill area, it doesn't have dinoseb slung all over the site, it doesn't have a sump and it doesn't have a pond. Would there be any need whatsoever for any remediation or investigation of this site, in your opinion?

A. No. If we were able to snap our fingers and make the sump [2991] and the pond disappear, we would have a clean site.

Q. Then what can we conclude about the contribution of the bulk facilities to the need for remediation or investigation at this site?

A. The bulk facilities and the activities associated with the bulk facilities, based on all the data in the record, my review of all the analyses conducted by

other professionals on this project, did not make any contribution to remediation costs at this site.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 21
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Tuesday, May 4, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[3442]

* * *

THOMAS W. KALINOWSKI,
called as a witness on behalf of Defendant Railroads, having been first duly sworn, testified as follows:

THE CLERK: Please state your name and spell your last name for the record.

THE WITNESS: Thomas William Kalinowski. K-A-L-I-N-O-W-S-K-I.

* * *

[3413]

* * *

DIRECT EXAMINATION

BY MR. LASATER:

Q. Good morning, Dr. Kalinowski.

A. Good morning.

Q. Would you please summarize for us your formal education.

A. Yes. Thank you. I have a Bachelor's of Chemical Engineering degree from Northwestern University that I received in—

Q. Could you pull the mike towards you a little bit?

A. in 1972. I then received a Master's degree in Environmental Engineering from Northwestern, a Master's degree in Environmental Health Sciences from Harvard University School of Public Health and a Doctorate in Environmental Health Sciences from the Harvard University School of Public Health. I did post doctoral work in Chemical Engineering at UC Berkeley after that, and then started a career in consulting.

* * *

[3452]

* * *

BY MR. LASATER:

Q. What's been marked as Exhibit 3032, did you

participate in the preparation of this series of graphics?

A. Yes, I did. I basically took the information from my expert report in this matter and tried to reduce it to some key points for discussion.

Q. Okay. Now, the first series of these graphics in 3032 relate to one of your three primary opinions in this case; is that correct?

A. Yes.

Q. And what is the topic of your first opinion?

A. The first opinion relates to the development of an algorithm for calculating a divisible share of the remediation costs for the B & B site based upon the contribution, as it may be identified, for source areas or sources at the site.

Q. Was this developed in response to the request from railroad counsel, myself and others, to develop an algorithm that would allow for a reasonable means of dividing the future costs for [3453] groundwater remediation as proposed by EPA?

A. Yes.

Q. And as part of that charge, were you asked to be able to do this in a way that it could account for releases that originated from the Brown & Bryant property as opposed to releases that originated from the railroad leased property?

A. Yes, that's my intent.

Q. And this first slide, first page, by what it says, I gather that you have concluded that there is such a method available?

A. Yeah, I concluded that costs for remediating impacts to groundwater can be calculated as a divisible share of the total chemical mass present in the groundwater, in this case, the A zone groundwater.

Q. And if you would, provide us with an overview of the basic structure of this approach that you propose as your opinion.

A. I believe the Court has heard testimony over the past few days, Mr. Connor in particular. I was present when he described the extraction system that is currently planned by the U.S. EPA for the A zone aquifer unit and as it's described in the Army Corps of Engineers documents that I have seen, consisting of a multiple well extraction system targeted for the high concentration areas located on the Brown & Bryant property.

My understanding is it's going to begin with three to five wells in the areas of maximum concentration and depending [3454] on its ultimate function, may be modified.

But the program was described, I believe, accurately by Mr. Connor as a "mass removal scheme." The intent is to remove mass from the A zone aquifer in an effort to keep that mass from penetrating to the B zone aquifer.

So first of all, I focused on the nature of the remedy in this particular case as relating to mass. There are obviously other ways that remedies could be configured to attain goals that are related to other factors, but in this case, it's pretty clearly a mass-driven removal scheme.

Q. And given that it's a mass removal scheme, how does the use of granular activated carbon for groundwater treatment bear upon that?

A. Well, a couple points were established in the documents, the Army Corps of Engineers documents. The recommended remedy that, first of all, all of the chemicals that were detected in the A zone

groundwater can be treated by a common, conventional technology known as granular activated carbon, or GAC, and that, basically, is an adsorption process whereby the chemicals in the groundwater are transferred on to a sorbing media, in this case, activated carbon, which can then be removed from the site and regenerated or disposed offsite.

The Army Corps of Engineers documents, in particular, describe this testimony, and I'm referring to I believe it was the May of 1995 there were draft specifications that I saw **[3455]** where they called out in great detail the hardware related to extracting water from the A zone and delivering it to the carbon treatment system. So the system itself consists of pumps, pipes, tanks, valves and controls, but the heart of it is to deliver the mass of the pollutants from the groundwater and deposit that mass onto the carbon which will then remove it.

I have a diagram as a slide that I took from a particular Corps of Engineers report that you see on the monitor now. It's Figure 2. It's entitled, "1 to 10 Gallon Per Minute GAC Treatment Train, Brown & Bryant Facility," taken from the Technology Evaluation Report for Brown & Bryant Superfund site, Arvin, California, prepared by the U.S. Army Corps of Engineers, dated June 14th, 1994.

And as you can see, the diagram beginning at the left-hand side shows groundwater, which would be extracted groundwater, entering a holding tank, passing through some cartridge filters to remove sediment and then going through what they describe as aqueous phase granular activated carbon and then to storage and dispose.

A key element, of course, is the delivery of the

groundwater with the mass to the carbon, and for the purposes of my expert report on talking about estimation, allocation of remedial costs, I have to assume that the system will, in fact, do that, that it will be effective in doing that. [3456]

Q. The system you are talking about is the delivery system of extracting the groundwater?

A. Right. What's on this figure before you is the treatment system but that, as I said, the whole system, the wells, the piping, we are getting into the treatment, is what I refer to as the extraction and treatment system. But my analysis has been predicated on the assumption that the delivery system, the extraction system, in fact, works.

Now, I know that there has been some testimony by Mr. Connor that he has his doubts about the effectiveness of it. I know that from reading Dr. Kueper's report that there were some concerns about the safety of that system, and I know from reading Army Corps of Engineers reports that are contemporaneous with this technology report that there was some question about that, but I had assumed that in fact it would work as designed.

Q. Let's first focus on it. It sounds as if you are saying you assume that, but you see that there are doubts or maybe more than doubts with regard to the extraction of the water to deliver it to the start of the treatment system; is that a fair statement?

A. Yes.

Q. Now, the treatment system which is shown on this Figure 2, which is page 2 or 3 of the overhead graphics, your comments that you have just made about efficacy of the system did not go [3457] to this treatment process itself; is that correct?

A. No. That's what I was just trying to make clear, is that the treatment process itself is conventional technology, I have used it on some of the sites I have mentioned earlier.

Q. So GAC, when you run water with these types of pollutants through GAC, they extract these pollutants and it's in the conventional technology that's really not an issue as far as you are concerned; is that right?

A. Right, there is obviously, in any given site, lots of factors to design, but it will work.

Q. Now, let's digress for a moment to the efficacy of the delivery, the extraction and the delivery of the groundwater with the pollutants in it to this treatment system. You mentioned some Army Corps of Engineers comments and questions raised. Could you summarize those for us?

A. The record that I reviewed had in it around the time of this figure, the June 1994 time frame, that the Army Corps of Engineers was brought in to begin the design implementation of the remedy selected in the ROD.

They did several things, one of them was to evaluate the treatment technology and basically make the recommendation to go to a granular activated carbon system. That's the treatment evaluation report from June that I cited.

There was a companion report from June of 1994 that was also transmitted by the Corps of Engineers to Cynthia [3458] Wetmore at U.S. EPA, and it was labeled, "Report on the Hydrogeology and Design of the Proposed Groundwater Extraction System for Brown & Bryant Superfund Site, Recommendations for Extraction and Handling of a Zone Groundwater." I

found at least three different versions of this report in the file, but it began with a June 16th, 1994 draft that was sent to Cynthia Wetmore, and then August 5th, 1994, there was another version of it that I have and then that version got modified slightly and was attached to the May 1995 Corps of Engineers' draft specifications.

THE COURT: Do I understand your work, it has been to evaluate this Corps of Engineers granular activated carbon treatment system from a cost standpoint, you accept it as operative technology that works on other sites, but you did not do an analysis whether it is an appropriate remedy for this site; is that an accurate statement?

THE WITNESS: I didn't do separate tests on the water, but what I'll present to you, your Honor, is my analysis using conventional engineering factors that have been considered and were, in fact, used by the Army Corps of Engineers to evaluate the technology, the conclusion that it should work that granular activated technology treatment should work quite well in this case.

What I'm speaking to you now is just related to some of the understanding that I have about the delivery of that **[3459]** contaminated water to the carbon itself.

THE COURT: Yes, that, I understand. I am changing the focus slightly because what I'm interested in knowing is if you did any analysis, you were discussing Mr. Connor's testimony of last week, on the choice of this remedy in terms of—not only of its feasibility, but its necessity as well.

THE WITNESS: By the "remedy," are you including the extraction system as well as the

treatment system?

THE COURT: Yes.

THE WITNESS: As far as my expert report is concerned, I had to assume that the extraction system would deliver the water to the treatment. As far as the treatment is concerned, I did my own calculation, which I have in the information that we are going to discuss, that for my purposes verified that the treatment technology would work and would be effective.

THE COURT: All right. And in terms of the choice of the remedy, did you do any analysis to determine whether, under the requirements of the National Contingency Plan, this is the best remedy?

THE WITNESS: No, I did not.

THE COURT: Thank you.

* * *

[3483]

* * *

Q. So now we go to the next chart.

A. The next chart is a table for the main contaminants of the groundwater in the A zone at the Brown & Bryant site beginning with 1,2-dichloropropane, and the others. I've listed the two Freundlich isotherm parameters that you can obtain from the literature. These constants are empirically determined and published, and I cite an American Water Works Agency publication from February of 1990. And the same values are available in an EPA treatability database that I cite in my report, U.S. EPA 1994 document.

So for each of these contaminants, you can—the

design engineer can look up these values, and using these values, calculations can be made. And, in fact, the Corps' document that I mentioned this morning that referred to treatability calculations went through these very same calculations to estimate carbon efficiency when they made the [3484] recommendation to switch from a UV/Oxidation system to a GAC system.

Q. Then did you use those constants in that table on page 3 in what you put forward here on page 4?

A. Yes. Again, by way of example, using an equal influent concentration, by that I mean assuming that all of the chemicals are arriving at the treatment plant at the same 1 part per million concentration, by way of example, I calculated how much carbon would be utilized in such a treatment stream per thousand gallons of water.

Again, I don't know how effective the extraction system is going to be in delivery, I don't know how much water it's actually going to deliver right now, but we can calculate what the relative efficiency for carbon is for each of the contaminants.

With this equation, what you have up on the monitor now shows is the simple calculation of the mass of granular activated carbon that's required to adsorb any particular compound in terms of pounds of carbon. That's what we want to determine. And it's based on Q, which is the volume of water. And I used the thousand gallons there, a concentration for the dissolved chemical in that groundwater.

And, for illustration, I used 1 part per million or a thousand micrograms per liter. There's a unit conversion factor. And then you use the adsorption coefficient from a [3485] previous table. And, basically,

you do the math and you can calculate pounds of carbon that would be required for each of the contaminants per thousand gallons of water.

I did that calculation as an example, again, assuming that there was an equal concentration of a thousand micrograms per liter in the groundwater for each chemical entering the treatment system, and I calculated a mass carbon per thousand gallons for each chemical, and that's presented in the next table.

Q. Before we go therc well, perhaps it will get explained in the next one. This is on page 5 of Exhibit 3032, and now we're going to Table 2 in that same exhibit. Now, what does Table 2 show us?

A. Table 2 again shows—it has several columns of values, and the first column are the individual chemicals of concern at the A aquifer. I assumed influent of 1,000 micrograms per liter. Obtained the Freundlich isotherm parameters in the second cxcuse me, in the third and fourth columns, and then calculated the adsorption coefficient, which is Q, and that's in the fifth column as micrograms per gram. The values that you see there are the relative efficiencies of carbon for each of the contaminants.

The last column is thc using the equation that we just looked at, the estimated carbon usage rate in pounds of granular activated carbon per thousand gallons of water with [3486] this hypothetical mix of water. One thing to notice from this is that for in the next to the last column, the estimated coefficient is that there's some variability in the carbon's ability to adsorb the compound, but carbon will be effective on all of these compounds.

Your Honor, you asked me earlier what calculations I had done, and these are the calculations that I'm

referring to. Basically, using these published values, you can make estimates that this treatment system will work for these contaminants.

Q. Now, maybe you'll get to it later, but at this point you have an influent concentration, and those are assumed at a thousand parts per billion for each one of these chemicals listed; is that true?

A. Yes.

Q. And are you, in fact, able to let me phrase it another way.

This is assumed for the purposes of calculating this table, but, in fact, you can use the observed concentrations in the groundwater; is that true?

A. You can make estimates using those concentrations. And, again, in the 1994 documents that I mentioned earlier, the Corps of Engineers did that and had some values that were hypothetical abstraction concentrations.

Typically, this would be determined in the design phase following some work in the RI/FS phase that would include [3487] pumping tests and treatability studies and the like that would serve to estimate those influent concentrations. Ultimately, the design engineer was asked to specify the hardware, if you will, the side of the vessels, the pounds of carbon that would be in those canisters, has to make such calculations in order to pick his treatment facility, to design.

Q. Next we're going to turn to the estimated mass in the groundwater, but I want to be clear where you have gotten us to by Table 2. What has in general concept, what has been the train of your logic and thought to get us to Table 2?

A. Specifically, I started with the idea of how do

you make any estimate of a reasonable division of the cost of the remediation system? And, again, my review of the remediation system is that all of it is based on removing mass from the A zone. So all of the hardware is designed, or will be designed, to pump water with chemicals in it and deliver it to the treatment system.

In that treatment system, which will be granular activated carbon, all of those chemicals are treatable by that system. They have some relative differences that are can be estimated in advance as to how they will partition on the carbon, but this allows you to conclude that it is possible to estimate that mass removal and it's possible to remove that mass removal relatively, that is, one compound versus the other, if you have some estimate of the mass of that compound [3488] that was released to groundwater.

Q. So now we turn to the question of the estimated mass in the groundwater. This next slide is page 6 in Exhibit 3032, and what does this show us?

A. Again, I tried to summarize some of the equations that I used in my report, and the effort here is to determine a ratio for any presumed or hypothetical source or source area at the site. If you have some estimate of the total mass in the A zone groundwater and you have some estimate of the release to the groundwater that's being allocated, you can calculate how much of the carbon would be utilized and, thus, the treatment system would be utilized to remove that particular release. But it all begins with an estimation of the total mass in the A zone. And this sheet summarizes the first part of that calculation, which is estimating the dissolved mass.

There have been plume maps drawn by Dr. Stephens, and I use those plume maps to illustrate

thc or to estimate the volume of water containing certain concentrations of contaminants beneath the site. And using this equation, you can calculate the dissolved mass in various portions of the plume and then add it all up to get the total dissolved mass.

This calculation is basically one that was discussed by Mr. Connor, which is basically the volume of the plume, given its dimensions of area and thickness and porosity, and then if you know what the concentration is in that plume, you [3489] can multiply these numbers together with the proper units and get the estimate of mass.

Q. And have you looked at some of the other plumes that have been drawn for the A zone groundwater, other than Dr. Stephens'?

A. Yes, I have.

Q. And in doing so, what have you learned about the robustness of this calculation?

A. As we go through these charts, and as I did in my report, ultimately you wind up calculating individual masses for particular areas of the plume for each contaminant to arrive at the total mass. And I looked at, as discussed here, dissolved mass, and I made some additions for sorb mass, which is the next line which relates to what is sorbed out of the soil.

But when you add it all up and you look at where it is, you find that the vast majority, by that I mean greater than 99 percent of the dissolved and adsorbed mass in the A zone, is estimated to be within a couple hundred feet of the sump and the pond.

The remaining mass, which is illustrated by some of the wide ranging isoconcentration contours that are on these figures that other individuals have drawn actually have very little influence on the total mass.

The total mass resides very near the sump and the pond, and how you draw the shape of the plume doesn't change these calculations very much. **[3490]**

Q. And just to have a quick review, "sorbed mass" means what?

A. Go to the next slide. Basically, the sorb mass is the mass of the chemical actually adhering to the soil particle within the saturated zone.

As you've heard testimony about, basically, the contaminants in the aquifer sorb, or stick, to the carbon that's on the soil particles just as it does on granular activated carbon. It's, in fact, exactly the same principle. It's just when you're working with the treatment system, you have pure carbon, a hundred percent carbon, because you're trying to make it work, and when you're in the aquifer, you have a fraction of a percent of carbon typically, and so there's a little less there. But it's basically the same principle.

When you have these chemicals in solution, there is, by definition, some portion adhering to the surface of the soil. In this calculation that I show here, again, comes directly out of my report, and it utilizes, again, some chemical properties and some soil properties from the RI, such as the Koc, the organic carbon partition coefficient, to make an estimate of the amount of mass that's sorbed to the soil. So I looked at sorbed mass and dissolved mass.

There's also a third component, which is the DNAPL mass that, again, you've heard some testimony about. I've made no independent estimates of what the DNAPL mass is, but I have **[3491]** reviewed Dr. Keuper's report and I know that he has.

But when you consider total mass in the A zone, it will be important to add DNAPL mass to that, but

nonetheless, even if you exclude DNAPL mass, which I did in my report, you can calculate a total mass estimate with or without DNAPL.

Q. Just to make sure the record is I'm not trying to have you testify to this as an opinion, but just to see whether there's any conflict. Do you have any different view about the existence of a DNAPL or DNAPLs at this site as does Dr. Keuper who will testify later?

A. No, I've read his report and I agree with that.

Q. Then you said you did a calculation, and did you include the DNAPL mass?

A. Yeah. The equation that you just put up on the screen, which is to reiterate what I just said, is the total mass would be the sum of these three components dissolved, sorbed on the soil and DNAPL, which would be free mass, or liquid mass within the pore space of the soil. I did not, in my report, make an estimate of DNAPL mass and used only the dissolved and sorbed, and those calculations are summarized in the next table.

Q. This is on page 10 of 3032. What does this show us?

A. This lists the chemicals of concern in the A zone in the column on the left, the next two columns are the estimates of the dissolved mass and the sorbed mass using the equations that I just showed you, and then they're totaled to come up with the **[3492]** total mass excluding DNAPLs.

Now, again, these are based on the factors from the RI for things like saturated thickness and porosity and percent organic carbon, so they're engineering estimates. But basically they indicate that the predominant contaminant at the site in terms of mass,

not surprisingly, is 1,2-DCP, sort of a runner-up is 1,2,3-TCP, and then there are smaller quantities. These are expressed as kilograms and, in total, there's something on the order of roughly 500 to 600 kilograms of total mass in the dissolved and sorbed phase by my estimates, or that's roughly 1200 pounds or something or other. Again, excluding DNAPLs.

Q. Now, if we turn to page 11 of this exhibit, what are you demonstrating here?

THE COURT: Let me ask. When you say it's something on the order of 1200 pounds, by doing what? In other words, I see that are you saying that the combination of the dissolved mass and the sorbed mass, because we have total mass excluding DNAPLs, so are you adding the DNAPLs?

THE WITNESS: Let me back up. I'm sorry I confused you.

In the total mass columns, including DNAPL, each of those are listed as kilograms and they're totaled at the bottom of the page. So at the bottom of the page I have a total of 557, you can round it to 600, it's an approximation, that's in [3493] kilograms. I just, in my head, in good American engineering, converted from kilograms and pounds by multiplying it by 2.2 and made that estimate.

THE COURT: Thank you.

BY MR. LASATER:

Q. Then if we turn to page 11, what are you showing us here?

A. What I've gotten to at this point is again we've tried to come up with an algorithm for estimating how you can allocate remedial action costs using the system that's being designed and implemented at the Brown &

Bryant site, the carbon system. We've looked at the fact that mass can be removed by the carbon system and it can be calculated.

We looked at the mass that's in the zone, which is basically your target mass, and I'm saying it's at least 500 to 600 kilograms. And then if you had any independent estimate from anywhere on the site of a particular source or release or area, square footage, whatever you were looking at, that would be expressed as a relative fraction of the total mass.

And what this equation is here is the mass fraction contribution is composed of what I termed Mi, which is the mass of an individual chemical I determined to originate at a separate source or area divided by the total mass.

I did it in this way for this particular site because thc although I showed that the carbon coefficients have slightly different—show slightly different capacities for [3494] carbon for the different chemicals, in this case the mass is overwhelming dominated by 1,2-DCP so, essentially, you can for these purposes ignore those slight difference.

But I note here that it would be possible to actually reflect variability in carbon's ability to remove those compounds if you were dealing with, for example, a very large release of chloroform, which is preferentially less adsorbed than 1,2-DCP, you can adjust for that. But here I express it as a mass reduction, mass for release minus total mass in the aquifer zone.

Q. So this mass fraction, the Mi over total mass, there the numerator is Mi and the denominator is total mass; is that right?

A. Yes.

Q. So Mi, if there had been testimony in this case by either Dr. Walton or Dr. Chirlin, or somebody else on behalf of the government, that a specific or estimated quantity or mass of a release had originated on the leased property and made it to groundwater, how would that relate to this Mi over total mass fraction?

A. Any such particular estimate or calculation would be of the Mi value, would be a kilograms of 1,2-DCP from some location on the site, actually reaching the A zone groundwater.

Q. Now I show you this slide on page 12 of this exhibit. What is this saying? **[3495]**

A. I just basically reiterate what you just said, which is that the mass fraction is determined for any particular chemical, can be used to predict the increment, the relative consumption of granular activated carbon for the remedy, that could be used as a rational basis to prorate or divide the remedial action costs for such a system.

Q. Now, you've done some examples. If you would, take us through your Case 1, simple mass fraction without DNAPL.

A. Again, here I'm saying simple mass fraction because I am ignoring any adjustment for relative differences in the efficiency of carbon because it's dominated by the 1,2-DCP. And I showed what I referred to here as the denominator, or total mass, as being the sum of those values that I calculated in the previous table for sorbed mass and dissolved mass, and indicate that it's something on the order of 500, 600 kilograms.

The numerator here, I had to assume a value. I have no seen no estimates of any other contribution

from any particular place—

Q. Let me ask you a question about that. Did I give you this assumption value?

A. Yes, you asked me to look at 1 kilogram release.

Q. And by using 1 kilogram, what does that allow the Court and counsel to do once you've calculated it for 1 kilogram?

A. Essentially, what we've done here is normalize the mass [3496] fraction or allocated fraction to a unit rate or a unit value of 1 kilogram.

Q. So we can take the output from this calculation and either multiply it times however many kilograms are divided by the fraction of kilograms of actual contribution to the groundwater?

A. Right. You can scale it up or down from 1 depending upon how many kilograms you had as an estimate.

Q. Now, before we go further, since this is an assumed value, if it was left to you to come up with the value for the numerator for indicating mass of hazardous substances which had traveled from the surface of the railroad property, leased property to groundwater, what number would you use as the numerator?

A. As I explained in my report, viewing the site as a private party RPM looking at the macroscopic evidence of releases and where things occur, I don't see any contribution on the railroad. I see the 99 plus percent of the mass, more if there's DNAPL, being located near the sump and the pond south and southwest of those locations on the Brown & Bryant property. So, essentially, I would be using zero here

for this fraction based on what I could tell.

Q. So notwithstanding that, if you would, take us through an assumed numerator of 1 kilogram for 1,2-DCP.

A. Well, in this example here I'm showing this Case 1, it's [3497] relatively straightforward. It's just 1 divided by the estimate of the total mass which, in this case, is the result is .0018, or approximately .02 percent.

Q. Before we go further. Let me just understand, the .2 percent, would that be the number that you would propose would then be multiplied against the total cost of the EPA pump and treat remedy?

A. Yes. I'd say it's a reasonable way of allocating what 1 kilogram meant in terms of building and operating that system.

Q. Now, if we look at your calculation for Case 2.

A. Yes. I thought it would be useful for today's purposes to look at how DNAPL might influence this, and I obtained an estimate of the 1,2-DCP DNAPL from Dr. Keuper's report, and I've included it in the denominator in the total mass estimate. You'll see in this equation the last term there is just DNAPL 1,2-DCP, and I've added that to the 557 kilograms that I calculated in the table that I showed earlier.

What I've used is the 1800 gallon estimate from Dr. Keuper's report for the A zone DNAPL volume. That's the volume of pure liquid 1,2-DCP times its density. And converting, again, from kilograms from pounds to kilograms, you can see that the total mass estimate, once you include DNAPL, dwarfs the sorbed and dissolved mass, it adds 7900 kilograms to the previous 500 to 600 range.

So there would be something on the order of 8400 and [3498] 8500 kilograms estimated by this method incorporating Dr. Keuper's results to determine total mass. This just shows the overwhelming mass impact—again, this adds to the amount of mass that would be centered near the sump and the pond and make my calculations indicate that 99.99 plus percent was near the sump or the pond, just overwhelmingly that's where the mass is and that's where the extraction system is.

If anything, what I'm getting at is that it makes the reasonableness of this calculation even more self-evident to me because that's where they're going to build the extraction system, that's where they're going to pump, that's where they're going to find the mass.

Q. And if you use the DNAPL with the dissolved and sorbed mass in this calculation, what percentage of the cost of the EPA pump and treat system for the A zone groundwater would, according to your opinion, be attributable to that 1 kilogram?

A. Again, it would be 1 divided by 8400, in this example, or .00012 as a mass fraction, or approximately .01 percent per kilogram.

Q. Now I have page 15 up here. What are you using this to demonstrate?

A. I just wanted to illustrate that you could actually do this in terms of pounds of carbon if you wanted to incorporate the coefficients. As I said, if there were a compound or a chemical found to be released that was poorly adsorbed and in [3499] large quantity, it might influence these percentages slightly.

What I found is illustrated on the next two slides, is that making that adjustment to actually calculate pounds of carbon to be consumed, for this case, because

the mass of 1,2-DCP dominates, there is no real impact when you talk about a 1 kilogram release of 1,2-DCP. The fraction, as I show for Case 3 on page 17 for a 1 kilogram 1,2-DCP release is still .2 percent. In this case, it's .2 percent of the carbon, but it's the same result.

Q. Now, is this—this Case 3, is this making allowance for the Q, which is the affinity of these hazardous substances which are in the A zone groundwater and in the saturated zone, that it's the affinity that they have for carbon; is that right?

A. Yes.

Q. And, again, it may be too simple a way, how quickly relative to each other they use up the carbon in the filtration system; is that right?

A. That's right. Basically, we refer to the sort of in the jargon of burning carbon and basically consumes each kilogram of these individual contaminants consumes a certain amount of the carbon.

Q. Does that complete your opinion with regard to a method for dividing up the costs of the pump and treat remedy dependent upon where the releases of the mass of hazardous substances [3500] originate?

A. Yes, for this site and my understanding of that remedy, yes, it does.

* * *

[3528]

(Defendant Railroads' Exhibit 3032 was received.)

CROSS-EXAMINATION

BY MR. MacAYEAL:

Q. Dr. Kalinowski, your allocation is based upon a need to determine what quantity of contamination

came from the railroad parcels; am I right on that?

MR. LASATER: Objection, vague. He's done three allocations.

THE COURT: Do you understand the question?

THE WITNESS: Yes, I believe I do.

THE COURT: Overruled.

You may answer.

THE WITNESS: The calculation of a relative contribution from any area would require an estimate of some sort of the—what I refer to as a "numerator," the mass being released.

BY MR. MacAYEAL:

Q. In other words, you've helped us determine what the denominator is, and then you have to figure out what the numerator is to come up with the percentage?

A. Yes. I calculated presented a means for calculating the denominator and how you would evaluate the numerator if there were some release being considered.

Q. Okay. Now, for purposes of your opinion, though, you concluded that there was zero contribution from the railroad **[3529]** parcel?

A. As I outlined in my report and said here, based on my macroscopic of what I can see, I don't see any indications of release from there.

Q. You testified earlier that you had done some studies with regard to preferential pathways in the vadose zone. You mentioned one site where you had done some work with that.

A. I don't know if I mentioned studies as much as I have seen sites with preferential pathways in the saturated zone.

Q. And then you also discussed the Corps, there is something in the Corps report about how the water may be following only through a very small area, something to that effect, and Mr. Lasater asked you about rivers and that type of thing?

A. Again, that was the discussion regarding the A zone saturated movement of water in the saturated zone. That's what the Corps report addresses.

Q. All right. Now, as part of your analysis, did you perform any analysis of whether or not there was a surface pathway from the railroad parcel down to the pond, that is, a surface grade?

A. I did no analysis of that.

MR. LASATER: Your Honor, I have an objection and a clarification. This witness has been offered with a predicate opinion of no release from the surface of the leased property to groundwater. Dr. Stephens is going to testify to that.

I just want to be clear here that by government's [3530] counsel going into the areas that he seems to be going in now, I don't want this to be perceived as expanding Dr. Kalinowski's opinion and, therefore, a redundancy objection be applicable against Dr. Stephens' opinion.

THE COURT: All right. Dr. Kalinowski is, then, utilizing and relying on Dr. Stephens' opinion?

MR. LASATER: Well, he is—we can ask him, and the answer is yes, your Honor. He also independently, as he says, from the macro view of a remedial manager, a remediation manager, which is his typical job responsibility, he also has that view, but it was in no attempt to usurp the opinions and the basis that he include a groundwater modeling of Tough2VOC surface transport to groundwater and an extensive

opinion has been developed by Dr. Stephens.

THE COURT: All right.

BY MR. MacAYEAL:

Q. So you picked the number zero, though, from the railroad parcel in terms of the contributions?

A. I was asked if what number would I pick, and I would pick zero based on what I see in the groundwater plume.

Q. So I'm trying to find out, did you do an analysis of where the various sources were on the various on the two parcels or are you relying entirely on another expert for that?

A. I'm certainly relying on the other expert's opinion on those various pathways. What I said in my report is based on [3531] my estimates of mass and where the mass is in the plume and the shape of the plume, that there does not appear to be any separate sources or contributions that would be measurable from the railroad leased parcel.

Q. Okay. Well, that's what I was trying to get at by my question. I was going at the issue of I asked you whether you had conducted an analysis of whether or not there was a surface pathway from the railroad parcel down to the pond, and I thought I heard you say no, you had not done that type of analysis?

A. I have not done that type of analysis.

* * *

[3537]

* * *

DANIEL B. STEPHENS,

called as a witness on behalf of the Defendant Railroads, having been first duly sworn, testified as

follows:

* * *

[3538]

* * *

THE CLERK: Please state your name and spell your last name.

THE WITNESS: Daniel Bruce Stephens. S-T-E-P-H-E-N-S.

THE CLERK: Thank you.

THE COURT: You may proceed, Mr. Lasater.

MR. LASATER: Thank you, your Honor.

DIRECT EXAMINATION

BY MR. LASATER:

Q. Dr. Stephens, if you would, let's start with your educational background.

A. I have a Bachelor of Science degree in Geological Science from Pennsylvania State University. I have a Master of Science in Hydrology from Stanford University. A Doctorate in Hydrology from University of Arizona.

Q. And would you relate to us your work history with particular emphasis on work experience that would relate to your opinions in this case?

A. Well, my—I began working in between—after I graduated [3539] from my Bachelor's degree, I worked in the field of nuclear power plant siting, which is a lot of field investigative work that I was involved in.

After I got my Master's degree, again, I continued to do some field work in hydrology on nuclear power plant sites, one of which was in the Wasco area in a

community north of Bakersfield. And I, subsequent to receiving my doctorate degree, I was a professor in Hydrology at New Mexico Institute of Mining and Technology. I was there for about ten years. During the time, I was Chairman of the Geological Sciences Department for about three of those years. And I conducted a great deal of my research in the field of hydrogeology, and vadose zone, transport processes, recharge were some of the areas that I was involved in in publishing.

Q. And since that time, did you form the company that you are currently employed by?

A. Yes. It was developed during the time that I was a professor. Just got too much consulting work and hired one of my students to help me out and we just got busier and busier and it became a point at which I decided to give the consulting business a try, so in about 1989, we left Socorro, New Mexico, moved to Albuquerque and began our company.

Q. And how many approximately how many employees does your company currently employed?

A. Approximately 110.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 22
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Wednesday, May 5, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

[Direct Examination of Daniel Stephens continued]

* * *

[3594]

* * *

Q. Let me now show you G-96.1. Now, from the information that is in the file, this is the enlarged version of G-96.1, the smaller version is in G-97—it's from the Ecology and Environment, Inc. photographic record. It has a date, 10-27-91. The time taken, 2125

hours. Frame number 32.

Do you have records indicating the rainfall that preceded that time and date?

A. Yes. There's approximately one-half inch of rain occurred on the day before this photo was taken.

Q. And does that bear on any calculations that you've done that relate to the holding capacity of this puddle in the swale [3595] on the southern end of the railroad leased property?

A. Yes, it does.

Q. Would you please explain those to us.

A. Well, when rain percolatc or when rain falls down onto this oiled asphalted surface, it accumulates in a topographic depression, and you can see the depression here in this photo. And what you can see at the very far end where it says "Cal Cook," or "Cal Cool," on the side of the building, there's a gateway that goes off to the south end of the property.

There's what appears, to me at least, to be dry ground between the very southern and southeastern end of this water depression. And when it rains, the depression here, as we call it, swale, could hold up to approximately an inch and a half of rainfall.

We've calculated this based on the Soil Conservation Service runoff excuse me, the curve number model, which would be based on the depth of water, the topographic features of the area, and the amount of rainfall and the nature of the surface, being an oiled asphalted material. And from those calculations, we would see that this depression would hold the inch and a half storm.

And from this photo, there was about .51 inches of rainfall the day before, which is consistent with our

calculations, because it does not appear to be any spillage over the edge of this pool. There looks to be some freeboard [3596] available for additional water to fill up the pool before it could spill out of this retention area.

Q. And your calculation of a one and a half inch rainfall, does that make allowance for what basin I don't know what the terminology is.

MR. MacAYEAL: Objection.

MR. LASATER: Watershed edge area is what I am thinking of.

MR. MacAYEAL: I think counsel misspoke. He said one and a half inches and I believe the witness said .51.

THE COURT: I heard one and a half.

MR. MacAYEAL: I thought the witness said .51, maybe I misheard.

MR. LASATER: There are two numbers being used, one is the rainfall for a particular day and the other is the calculated number. I was asking him about his calculated number, which is one and a half inches.

THE COURT: All right.

MR. LASATER: Let me ask the question again.

BY MR. LASATER:

Q. Your estimate of the holding capacity of this swale area, holding capacity of rainfall, does that include a collection of water from a watershed which is greater in size than the actual pool itself?

A. Yes, sir. It's a little over an acre. It would include [3597] the roof of the building, the edges that could contribute runoff to the site.

Q. And did you look to see how often a storm that would produce one and a half inches of water, how

often that occurred in this area?

A. During the period of 1975 through 1989, it occurred one time, and that was in February of 1978. Normally, in a month, the rainiest months would be of, say, January, February, March. Normally, there's an inch of rain.

So, normally, in most months, the total rainfall would be retained in this swale. It would take a rainfall of greater than 50 percent more than the monthly mean to overtop this pool.

Q. Now, is it your understanding that this swale collected water from essentially the entire leased property plus a little more?

MR. MacAYEAL: Objection as to foundation unless he's assuming facts. Because we've had different time periods where different—there were different practices, like the pipe that Mr. Brown testified about.

THE COURT: The objection is sustained on the nonspecitivity as to time.

BY MR. LASATER:

Q. Well, Dr. Stephens, have you taken into account this purported pipe underneath the railroad that was supposedly **[3598]** placed underneath the railroad spur?

Actually, let me get the aerial photo. Do you have that aerial photo in your report, the 1975, looking in G-6? If it's not there, then I'd like you to respond to my question in the context of that aerial photo.

You have it at Figure 5. I'd also like to get it in the larger version we have. I don't want to delay this to find it. If we can find it in a moment.

Using the February 1975 photo, or any of the later

photos, would you tell us what allowance you have made for John Brown's report of having of his people having put a culvert underneath the railroad spur at the southern end of the leased property?

MR. MacAYEAL: Judge, I'm going to have to make an objection here, because this was the photogrammetrist depiction where Dr. Chirlin tried to put in the rest of the information that was taken off the railroad parcel and they objected to that, so we didn't get that into evidence, and now this witness is purporting to interpret this photo. So I object to that because they precluded Dr. Chirlin from doing the same thing.

MR. LASATER: Your Honor, I'd be happy to use a different photo. In fact, we're obtaining that right now.

THE COURT: All right. The objection is sustained.

BY MR. LASATER:

Q. If we look at Exhibit 1023. [3599]

MR. HELDT: What's the exhibit number, I'm sorry?

THE COURT: 1023.

MR. LASATER: 1023, 1024 and 1025.

BY MR. LASATER:

Q. Now, this photo is purported to have been taken in February of 1975, that's Exhibit 1023. Now, if we next look at the photo that was supposed to have been taken in 1981, then you look at the southern end of the leased property. And then we look at 1025, looking at the southern end of the leased property. I ask you what bearing do these aerial photos have upon your calculation of the holding capacity of the swale on the south end of the leased property?

A. Well, we've looked at these air photos, and read the testimony of Mr. Brown, who indicated there was a culvert under the railroad tracks that drained the property. There's no evidence of a culvert that would transfer water based on these photos from the leased property onto the Brown & Bryant property. If there were, you would see some trail, some evidence of channeling, topography, which would be reflective of either vegetation in that focused recharge area or you would see some evidence of drainage, just as you see evidence here of swales and so on.

For example, on Exhibit 1024, you can see a linear feature on the leased property, which looks like the depression that we've been talking about where rain has accumulated, but **[3600]** there's no evidence of a culvert. In fact, what we've seen and found in the field and what these photographs indicate to me is that, in fact, the railroad tracks were paved over and still are present. They were not taken out in this area before the UN-32 tank and the structures that are shown in these photographs to the north.

MR. MacAYEAL: Judge, I have no objection if this witness is making an assumption to this effect, but he's purporting to testify as to some photograph analysis of what actually happened there. I think we've already established that these types of experts do not have that expertise. Chirlin was precluded from doing that, or there was an objection to that effect.

THE COURT: Well, I must say that my copies of these photos, 1124—I'm sorry, 1024 and 1025, unless you're going to be using microscopic analysis and cartographic analysis, it isn't visible, at least to my eyes.

MR. LASATER: Your Honor, if you look at 1023.

THE COURT: Yes.

MR. LASATER: There is a railroad spur clearly visible that goes along the west side of the maintenance building and the warehouse and starts from just south of the UN-32 tank.

THE COURT: All right. I see two parallel lines that curve in the general area that you have described. [3601]

MR. LASATER: And they're in the exact location, your Honor, of the lease documents, which are in evidence in this case that show the presencc

THE COURT: But I think Mr. MacAyeal's point is, without either knowing that or interpreting it, to our eyes, as we view this, not knowing there was a railroad there, if we look at this map, without expertise, there's no way to identify that as a railroad.

MR. MacAYEAL: I will agree that there is a railroad spur, but Mr. Brown testified there was a pipe underneath it to help move the water down to the pond, and I don't know that he said it was there at all times. Obviously, there's testimony that they took the spur out at some point.

But for this witness, though, to be drawing conclusions from photos when we have evidence in the record if he wants to make assumptions, fine, but if he's saying that he can tell what happened out there just by the photos, the Court is just as good a witness of that as this expert.

MR. HELDT: The photo that's on the Elmo right now you're calling Exhibit 1023?

MR. LASATER: That's correct.

MR. HELDT: So the record can be clear, because we referred to it several other times in other witness'

testimony, we referred to it as Shell Exhibit 54. I just want the record to be clear that Exhibit 1023 and Exhibit Shell 54 are, in [3602] fact, the same photograph. This will all, I think, eventually tie together.

THE COURT: Well, let me understand, because I think I'm confused. If we agree that there's a railroad spur there and that Mr. Brown did testify that there was some kind of a pipe under it to help convey water, the witness is being asked to do what with those assumed or nonassumed facts?

MR. LASATER: Well, Mr. Brown testified to what he testified to about, some culvert or some conveyance. He did not testify as to what level that was put in so that what size the puddle would have to be on the leased property before it would begin to go through that culvert. So that's point number one.

Point number two is that this witness, as part of his work at sites like this during his professional career, has looked at photos for some purposes, not for all purposes, not to the same level of an expertise of the names that your Honor designated such people looked at such things.

The sole purpose of my eliciting what I've already elicited from him is just to say he doesn't find evidence of it when he looks at this for the reasons that he's indicated. Mr. Brown's testimony is what Mr. Brown's testimony is. Here is an expert who has the expertise that he has saying—

THE COURT: Let me ask the witness. Because I will tell you this, that, again, going back to the last case, we had [3603] photogrammeters, we had people who basically what they do is they interpret aerial photographs visually and with other aids, and so that's

all they do.

Now, is that what you purported to do here? Were you looking for a culvert or some conveyance mechanism in this area?

THE WITNESS: Yes.

THE COURT: You were?

THE WITNESS: Your Honor, I've had courses in photogeology at Stanford where we do this type of thing. I have some of the training

THE COURT: You do have that?

THE WITNESS: I've looked at depressions to see what differences there are in elevation. But that's not my practice, that's not what I do, and I'm not a photogrammetrist, but I do interpret air photos. I have appeared in court as using these photos in exactly the same manner as I'm doing here to interpret hydrologic phenomena.

THE COURT: And that would give you the ability, your experience and training, to detect a culvert from this kind of a photo?

THE WITNESS: Maybe not you can't perhaps see the culvert from this level of photography, but you can see the drainage that should be channeled downstream from the culvert. We don't see any evidence of that. Furthermore, I was in the **[3604]** field. I looked twice for this culvert, and, in fact, I asked the remedial engineers who took the tracks out only a few weeks ago if they found a culvert. They didn't find a culvert.

MR. MacAYEAL: Judge, that's hearsay, and the site in 1997 we know is different from the way it was back at the time of operation. Furthermore, in the witness' own aerial photo he shows a drainage line, so I

just object again.

If he's making an assumption, I have no problem, but if he's trying to testify to historical facts, I don't think there's any foundation. We should get a witness who was there.

THE COURT: All right. Well, you just made the statement that the witness had found evidence of a drainage and I just heard him say that he hasn't found the evidence of such drainage.

MR. MacAYEAL: I'll cross him on that, but he has another picture where he has an arrow.

THE COURT: Well, you can have a direction of surface flow based on the gradient on the property, which I don't know what the arrow is supposed to depict, it's an entirely different subject from whether there's a culvert there, or some other drainage conveyance mechanism that would be a channel or, I don't know what else it would be, whatever.

MR. MacAYEAL: I think Jack Brown did testify that they did grade it to show it would pump down to the pond.

THE COURT: I agree, he did. This property was [3605] graded to drain to the southeast. That, at least according to Mr. Brown, that's what he said.

MR. MacAYEAL: So if he wants to assume that's not true, fine, but I just

THE COURT: No, he's not assuming that that's not true. He is focused Dr. Stephens is focused on whether there is a specific conveyance mechanism, either a culvert or a channel or something else at this point, where the spur ends to go to the pond from the leased property.

MR. MacAYEAL: Well, we know from the photo

that the spur was taken out at some point, so I don't know—I don't think there's any evidence as to whether that pipe was removed as well, but

MR. LASATER: Your Honor, I think counsel now is interpreting photographs. We have someone who has been to the site and who can testify and say that the spur was still in place within the last year.

MR. MacAYEAL: Based on what someone told him.

THE COURT: No, he said he saw the spur.

MR. MacAYEAL: Okay, all right, the spur, but not the culvert. That's fine. If he can swear to it, that's fine.

THE COURT: Yes. All right, you may proceed.

BY MR. LASATER:

Q. Dr. Stephens, have you told us—have you completed your response with regard to information indicating whether or not [3606] there was some kind of culvert underneath this railroad spur that ended up going north and south along the west edge of the warehouse?

A. Well, I think thc the photo that we were looking at—

MR. MacAYEAL: Objection, your Honor, I thought that the testimony was going to be what he actually saw. I thought they just said he saw the culvert, he could testify to it, now he's going back to the photo.

THE COURT: Let the witness answer, and then if you have any difficulty with the answer, you can make a motion to strike.

You may answer, Dr. Stephens.

THE WITNESS: I believe the question was

whether there was any other information regarding the presence or absence of a culvert?

BY MR. LASATER:

Q. Right. And I'm not suggesting that there was. We had such a long colloquy of counsel, I wanted to make sure that we had completed that, and then I was going to ask you about what you observed when you actually were at the site.

A. So I'm not sure what the question is.

Q. The question is, did you complete your answer with regard to information available to you indicating whether or not there was a culvert?

A. There's one thing I would add that gets back to the exhibit [3607] we were looking at with respect to drilling SB-423, which showed the flooded swale.

Q. That's Exhibit 96.1.

A. That's correct. This picture was taken a day after the rain. Had there been a culvert there, it would have drained at the site. I don't believe this volume of water is difficult for a culvert, which I would think is only a foot in diameter, would have any difficulty draining.

The other aspect that you asked about, any other evidence, is just my engineering judgment, if you will, or perspective on drainage of sites. I can't imagine why one would have a culvert to take water from the south end of this property and put it into an area which is already troubled by flooding in the south part of the Brown & Bryant property. It makes no sense to me to flush water from one area onto another, and it's even more trafficked and used than this portion of the site.

MR. MacAYEAL: Judge, I move to strike if he's we've heard testimony from Mr. Brown as to why they

did, and this witness is saying, "I can't figure out why anybody would do it." That's not relevant. We've heard testimony about why it was done.

THE COURT: I'm going to grant the motion to strike because, apparently and my recollection is that the pond has been there at least from the 60's in various configurations and [3608] various linings that were in it, and I don't remember more than one occasion being testified to when the pond ever overflowed in terms of there being a flooding problem at the south of the property.

MR. LASATER: Your Honor, we have aerial photos and we have testimony indicating that water backed up in the area to the west and north immediately around the pond once it began to be bermed, and that at least began in 19—late 1979 or 1980. And if you'll remember, the lease of the leased property doesn't go in until right at the end of the year of 1975, so it's only in place for '76, '77, '78, '79 before these changes take place in the pond.

THE COURT: All right. Then what I will ask Dr. Stephens is this. Did you consider that kind of evidence in reaching your conclusion?

THE WITNESS: Yes. It's in my expert report, as well. That comes out of testimony by Merryman, I believe.

THE COURT: All right. Well, I didn't read, because nobody asked me to, your expert report, and I'm only receiving what I hear from you now.

And so I'll change my ruling on the objection and overrule the objection since Dr. Stephens did make actual observations from site data and historical descriptions of the site to support his opinion, and it will be subject to cross-examination. [3609]

BY MR. LASATER:

Q. Now, let me ask you to assume the accuracy of the report that there was a culvert. Even if that is the case, is there anything about the level of the culvert compared to the level of the swale that was provided in that testimony or anywhere else that would indicate to you that your calculations of the area and the swale is not accurate?

A. No.

Q. Now let's turn to your actual observations of going to the site. When was the first time that you went to the site, approximately?

A. I believe it was June of '98.

Q. And did you look for this spur track that splits off from the main track just south of the UN-32 tank and curves until it's going almost due north along the west side of the warehouse?

A. Yes, sir.

Q. And what did you find?

A. I found that it extended just about up to the edge of the overhang, or the awning. It appeared to me that the area which was removed is consistent with the area photos where they removed the tracks in order to put the awning in, and that the remainder of the section of track south of the overhang was still in place, but covered up and overtopped with the asphalted-like material which formed much of the paved area on [3610] the leased property.

THE COURT: Well, were the tracks visible through the asphalt?

THE WITNESS: Yes, you could see the top of the track in places. In other places it looked like the asphalt was still covering it, but it was pretty clear.

BY MR. LASATER:

Q. Did you attempt to take any photos that showed this that you have provided in your expert report?

A. I'm not sure in the expert report there's a photo of a track. I could be mistaken.

Q. I think I'm thinking of a photo that didn't make it into the expert report, so I'll move on to another topic.

In this observation that you made actually in the field, was the railroad spur raised above the ground level on either side of it?

A. Yes, it was.

Q. And can you approximate approximately how much it was raised?

A. Well, I think, by looking at the rails where they were not capped or topped over with asphalt, the rail would have been 4 to 6 inches above the tie, which held the rail.

Q. And was there did you make an estimate of the top of the overcovering, over this what was left of the rail spur above surrounding—immediately surrounding land? In other [3611] words, when you include the ballast and the tie and the rail and the paving over the top of the rail?

A. Well, it's well over 1 foot in depth, and it's—at least that based on information in the field notes of Ralph Lambert that accompany this photo who measured the depth of water at greater than a foot, and at that point in time it's evident that the pool did not overtop the rail spur in my examination of this photo.

Q. So was your visual examination of what was left of the rail spur consistent with it being at least a

foot higher than the surrounding grade?

A. Yes, sir.

Q. Now, you mentioned Ralph Lambert's reference. Is that from the report of these site activities that were done by E & E?

A. Yes, sir.

Q. And there was a measurement taken at the deepest part of the puddle in the swale that is shown in G-96.1?

A. Yes, sir.

Q. And that was 1 foot deep?

A. Yes.

MR. MacAYEAL: Judge, I move to strike on foundation, unless the report actually says that, they measured it and it was a foot, because this witness was certainly not there with Mr. Lambert doing that.

THE COURT: Well, I at this point, unless the [3612] railroad wants the underlying data in evidence, I'll permit Dr. Stephens to testify that he accepted that measurement and is relying on it in his analysis just as that, for the fact that he relies on that hearsay. But if somebody wants the underlying data in for the truth, then you will have to have a foundation for it.

MR. MacAYEAL: It is in evidence, but I just wasn't clear whether he was making an assumption or if the report says, "I, Ralph Lambert, went out and measured it and it's a foot." If that's the case, then

BY MR. LASATER:

Q. I'm now handing the witness Exhibit G-96, which is entitled, "Final Report Task 6, Soil Sampling, Brown & Bryant, Arvin, California, Prepared for U.S. Environmental Protection Agency, dated April 22, 1992."

Now, have you found the reference in this exhibit?

A. Yes, I have.

Q. Would you tell us what page it's on?

A. It's on page 26 of the handwritten notes, and also on page 27.

Q. And would you direct us to a page number? Is that page 26 in the upper left-hand corner and 27 in the upper right-hand corner?

A. Yes, sir.

MR. LASATER: Let's wait until Court and counsel can [3613] find that. G-96, handwritten notes, page 26 and page 27.

THE COURT: Mine are numbered on every other page, the handwritten notes.

MR. LASATER: I think they alternate the location of the numbers, your Honor, page 26 and page 27.

THE COURT: Yes.

MR. LASATER: Upper left and upper right.

THE COURT: Yes. All right.

BY MR. LASATER:

Q. Now, Dr. Stephens, if you would direct us to what page you're on in this exhibit and read to us what you find there that indicates the depth of this puddle shown in this photo G-96.1.

A. Okay. On page 26, where it says,

> "1635 hours, start pumping from largest rainwater pond, which is near the lined pond, into the large water tank, pond was up to 1 foot deep. The other large pond is on railroad property near the south end and is up to 1 foot deep."

Then on the next page, 27,

"At 1635 hours," near the bottom, it says, "Grout to surface, finished pumping from pond near lined pond into large water tank. Water level in tank is greater than a foot. Start pumping from rainwater pond on railroad property (greater than 1 foot deep **[3614]** max) while drillers steam clean."

THE COURT: Let's take the morning recess. We'll stand in recess until ten minutes of 11:00.

(Recess)

* * *

[3681]

* * *

Q. Now, you also modeled a spill of 1,2-DCP at the surface; is that correct?

A. Yes, we did.

Q. Would you tell the Court what assumptions you made about that model?

A. We considered two cases where we were trying to determine how big a spill one would have to have on the leased property in order to impact the A zone to such an extent that it would require remediation, and that was a point at which it would have the A zone would have a concentration of 50 micrograms per liter or greater.

And we essentially had four steps in this process that are linked together for both cases. One case was on an asphalt surface, and the other case was on a bare soil surface.

The first step involved taking some water, actually, in varying amounts, from a half a I believe a cup to a couple gallons to five gallons, and spilling them on our parking lot, an asphalted surface, and spilling them on

silty sand in the vicinity of our office and looking at what area that spill occupied. Sort of getting some idea of how much area a five-gallon spill or so would consume. So we had a [3682] relationship between volume of a spill and the area it would occupy.

We scaled that up to what volumc what area a 500-gallon spill, for example, would occupy on an asphalt surface or on a bare soil surface. And what that really does is it tells you the thickness of a spill, and that's important because we then go to the next step with this finite thickness of spill occupying a finite diameter.

The next step is to calculate the competing effects of evaporation and infiltration. We take both into account. We use what's called the EPA model for calculating evaporation, and it includes wind speed, it includes the vapor pressure and temperature that are present.

We assume that the temperature was a warm day, I believe it was 77 degrees Fahrenheit, and we assumed it happened in June. So we used the mean monthly wind speed for June, and we calculated how much of that spill would evaporate and how much would infiltrate.

We calculated infiltration using an analytical solution by Reible and others, which is referenced in my expert report, that is specifically designed for a DNAPL phase. And, in essence, what we calculate is of that 500-gallon spill, 54 percent of it infiltrates and the other 40 excuse me, 56 percent infiltration and 44 percent evaporates for the bare soil case. [3683]

So with that mass in the soil, we then apply the code T2VOC, which allows one to consider all the DNAPL phase, the water phase, the gas phase, and

move that into the soil assuming it has the density and viscosity characteristic of pure 1,2-dichloropropane.

We allow recharge for that case of 1 percent of mean annual precipitation, which comes out to be about a millimeter and a half per year of areal distributed recharge.

Q. That's three times greater than the highest calculation you actually calculated from the actual data from the site; is that correct?

A. Approximately, yes.

Q. So you used a higher infiltration rate than what is actually observed at the site?

A. Yes.

Q. Okay, you can go on.

A. So we take the mass input from the infiltration and evaporation phase, put it into the T2VOC, and it predicts how far and how fast mass would move through the solid and exit to the water table. At that point we've been able to establish the mass flux, that is, how many grams per second have come into an area over the A zone.

So we take that mass exiting the vadose zone and put it in the aquifer, and calculate the concentration. And for this particular case, we got about 50 micrograms per liter was [3684] the impact, and that told us that was our threshold. We then stopped and concluded that if a 500-gallon spill did, in fact, occur, it would impact the A zone to an extent that would require remediation.

Q. And to require remediation, what assumptions were you making? The 50-micrograms per liter, why did you determine that was why did you assume that was a level that would require remediation, just so that

we'll know?

A. I understood that to be in the ROD.

Q. Now, if there was a spill of 1,2-DCP, it would be as a component of D-D, most probably, or Telone, and assuming it was about 25 percent did you actually do the separate calculation for D-D as opposed to pure 1,2-DCP?

A. No.

Q. Nonetheless, not having done that calculation, are you able to say something in general about which side of the magnitude of the spill you would do if you did do it for D-D?

A. I thought about that, and I think we're conservative in that if I had used a lower vapor pressure, in other words, taking the vapor pressure of the D-D, dividing it by 4, based on the mole fraction, assuming I still had now 500 gallons of D-D instead of 500 gallons of 1,2-dichloropropane, we would get more of an impact to groundwater with the use of the pure phase than if we had used the partitioned mixture.

Q. So it would take—in your opinion, it would take a larger [3685] than 500-gallon spill of D-D on bare ground at this site to get to the A zone groundwater at a level of 50 micrograms per liter, which is 50 parts per billion; is that right?

A. Yes.

Q. Now, you also did this for a spill on asphalt or an asphalt-like surface. Would you tell us how that spill analysis differed from the one you've just given us on bare soil.

A. It's essentially the same, except the physical properties of the asphalt are much different. The soil of the asphalt has low permeability, it has other

capillary characteristics that are inputted into the T2VOC. It's not extra layer in the model above the soil, the bare soil that we used in the first case. Only a fraction of a percent gets into the media.

One of the differences here is once we do get some mass into below the asphalt, we have no recharge. The recharge is stopped. It's assumed to be impermeable, so, in essence, we cap all the infiltration and all the gas as well in the subsurface and allow it to move downward.

Q. Is that a realistic assumption?

A. I think some of the gasses will escape. It's relevant when we talked about the neutron probe data at BB-1, for example, underneath the asphalt, how much drying can occur, and I talked about barometric pumping effects and the thermal heating effect that could drive the volatiles out, so I think [3686] we were fairly conservative.

Q. And even being conservative, what size of 1,2-DCP spill would you have to have to impact the ground water at 50 micrograms per liter?

A. I think it's well over 10,000 gallons.

* * *

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 23
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California Thursday, May 6, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[3725]

* * *

THE COURT: We're going back on the record in United States versus Atchison, Topeka. And we are cross-examining Dr. Stephens.

Mr. MacAyeal.

MR. MacAYEAL: Good morning, your Honor.

(Pause in the proceedings.)

MR. MacAYEAL: Judge, I left my copy of the moisture calculations he did over at the hotel. Dr. Walton is going to retrieve that, but let me ask about that anyway.

CROSS-EXAMINATION

* * *

[3784]

You'll recall the flood irrigation over here is one of the main drivers of pushing water here. Secondarily superimposed on here is a sump, which has a local mound on top of that westerly flow, and there's no reason why one would not logically extend a plume in this direction based on this data and those hydrologic pieces of information.

THE COURT: And is there any way that you know of in the science, in your background and experience, to say what contribution to the plume there has been from the various areas of the property, and the main distinction being the Brown & Bryant versus the railroad property?

THE WITNESS: I have not dealt with the issue of allocation per se, but my approach has been that all the groundwater contamination that's here is explained by releases on the Brown & Bryant property. You need no there's no evidence for soil contamination sufficient to have impacted groundwater for a variety of reasons.

One, the concentration; two, the lack of continuity of any of the 12 deep borings on the leased property, none of which have concentrations continuously to the water table when sampled at intervals of 5 to 10 feet. The only place you find that is in the 13 borings that have

been drilled through the Brown & Bryant property, nine of which have contamination continuously for some of the chemicals of concern all the way to the water table. [3785]

My view in this whole case, as I believe I articulated when I began to testify, was my opinion was that groundwater contamination is caused by releases on the Brown & Bryant property. There's no evidence that releases on the railroad property caused groundwater to be impacted to an extent which has caused a trigger of remediation, and that's the context that's the essence of my expert report as well.

THE COURT: All right. Thank you.

Let's take the morning recess. We'll stand in recess until ten minutes of 11:00.

(Recess)

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	NO. CV-F-92-5068 OWW
Plaintiffs,	)	Court Trial, Day 24
vs.	)	
BROWN & BRYANT, INC., et al.,	)	
Defendants.	)	
AND RELATED CROSS-CLAIMS AND THIRD PARTY ACTIONS	)	

Fresno, California — Friday, May 7, 1999

REPORTER'S TRANSCRIPT OF PROCEEDINGS

* * *

[3927]

* * *

We'll resume the testimony of Dr. Stephens.

CROSS-EXAMINATION (Resumed)

* * *

[3930]

* * *

BY MR. HELDT:

Q. Viewing, then, the evidence in its totality, that being that document, which was the totality of the EPA's air photo analysis which had multiple photos, multiple interpretations, some of which you agreed with, some of which you didn't, distilled to its essence, your opinion is, is it not, that this document upon which you founded some of your opinions contains the opinion that the pond had a berm, and you would tend to agree that looking at the totality of the evidence, it would appear that the pond has a berm; is that right?

A. Yes, sir.

Q. A berm which would tend to impede the flow of runoff into [3931] the pond except in very exceptional events in which you have massive flooding?

A. Yes, sir.

Q. A question has then been raised in prior examination of witnesses about the fact that there is, however, contamination in this pond, and the question has been raised, "Well, how did it get there?" Do you have some opinions about how contamination got into this pond?

A. From the information that we've reviewed, it appears as though there was a connection from the sump to the pond through a pipe.

Q. At some point in time there was a connection between the sump and the pond which would deliver contaminants directly into the pond; is that right?

A. Yes, sir.

MR. MacAYEAL: Judge, I move to strike that,

because there's absolutely no evidence in the record, and the only evidence we had was that there was no such connection. Mr. Merryman testified that he put it in in 1981, which the pond was lined, but prior to that there was no connection. There's no evidence of that.

MR. LASATER: This is proper examination.

MR. HELDT: Mr. MacAyeal just said two different things

THE COURT: The objection is overruled. [3932]

BY MR. HELDT:

Q. Would one mechanism prior to 1981 for contamination to get into the pond, could it be possible that it could be direct dumping into the pond, for whatever reason, that Brown & Bryant might have in its operations to dump directly into the pond as opposed to dumping into the sump?

MR. MacAYEAL: Objection, calls for speculation.

THE COURT: I think that is it possible, anything it possible. We will ask you to rephrase the question to ask him if, in his study of this site, he has found any evidence that there was intentional transfer of contaminants to the pond.

Can you answer that question?

THE WITNESS: Yes, your Honor. The information that I have is that my understanding is that the sump and the pond were connected during their operation somehow in the subsurface through a pipe, certainly after 1981, and my understanding was that it was earlier, as well. But if that's in that case, I have no information that would suggest there's dumping in the pond.

On the other hand, if the facts are different, such that there was only a pipe connecting the sump and the

pond from 1981 onward, then I would think it's possible and more likely than not contaminants were released into the pond by another mechanism in order to get it to spread as far as it did [3933] in the groundwater.

THE COURT: Thank you.

BY MR. HELDT:

Q. On Exhibit 1069-A, which is not admitted into evidence, but is merely demonstrative at this point, this is the overlay that EPA placed on top of that 1975 aerial photo, and it has an indication right here at the pond of HT. "HT," is that a common acronym for "horizontal tank"?

A. That was a question?

Q. Yes.

A. It's my understanding it was a sand trap or horizontal tank that would have slowed the velocity of water to allow sand or silt to settle out.

Q. We have this HT pointing to this area of the pond; is that right?

A. Yes, sir.

Q. We lift it up and look at the aerial photo, does that correspond, then, with this cylindrical object which appears to be over what you were describing as the sand trap that's on the edge of that pond?

A. It's in that area, but from this quality, I can't see whether this is a raised, above-ground horizontal tank or this is actually maybe if I had the original I can see it better.

MR. HELDT: We have another exhibit, that's 1069-A. Richard, zoom that in. [3934]

BY MR. HELDT:

Q. As we've now zoomed in closer, would it appear that that "HT" might be consistent with your

own analysis that that would be a horizontal tank.

A. It looks to be an above-ground horizontal tank.

Q. Perched over the lip of this pond in 1975?

A. One of them appears to be, yeah, in that position, yes, sir.

* * *

JA-343

[Trial Exhibit G-4]

Expert Report by

Thomas W. Kalinowski, Sc. D.

Re: AT&SF, et al. V. Brown & Bryant, et al.
No. CV-F-92-5068-OWW
(Consolidated Arvin Cases)

12 July 1998

EKI 920056.00

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1.0 STATEMENT OF OPINIONS

1.1 Groundwater Contamination on the Railroad Leased Parcel Originates on the Brown & Bryant Property

Opinion: *Given the evaluations presented in my prior declaration in July 1995 regarding available data on chemical occurrence in subsurface soils on the railroad leased parcel and the Brown & Bryant parcel and a review of more recent information, it is still my opinion that there has not been a release of chemicals of concern on the railroad leased parcel that has resulted in conditions in groundwater that would necessitate remedial response actions. Further, where there are occurrences of chemicals of concern in A-zone groundwater on the railroad leased parcel, such occurrences are readily explainable as the result of contaminant migration from the source areas know to exist on the Brown & Bryant Property.*

My prior declaration, with its supporting materials, presents my opinions regarding occurrence of chemicals in subsurface soils on the railroad leased parcel and the Brown & Bryant. Inc. parcel. See Declaration of Thomas W. Kalinowski in Support of the Atchison, Topeka & Santa Fe Railway Company's and Southern Pacific Transportation Company's Motion for Partial Summary Judgment, dated 3 July 1995. In Exhibit A.

My conclusions regarding chemically impacted soils, contaminating activities, contamination sources, chemicals driving remedial activities, and sources of contamination are described in Exhibit A. Specifically, the confirmed "Brown & Bryant Source Areas" consist of (1) the wash pad and old sump area, (2) the dinoseb area, and (3) the former waste pond, as identified by

the U.S. Environmental Protection Agency ("U.S. EPA") in the Remedial Investigation / Feasibility Study Report (First Operable Unit - Source Control) Brown & Bryant Superfund Site, Arvin, California, prepared by U.S. EPA, Region IX, ("RI/FS"), dated 28 May 1993. See Exhibit A at 16.

Additionally, recent testimony by witnesses has also described spills and leaks of D-D, which contains 1,2-dichloropropane ("1,2-DCP"), in the vicinity of the old D-D bulk storage tank. The old D-D bulk storage tank, which did not have spill containment, was located in the former bulk storage tank area east of the southern end of the former warehouse. See Deposition of John Howard Brown, dated 21 April 1998, pages 840 - 842, and Deposition of Lonnie Dean Merryman, dated 17 December 1997, pages 88 - 100. The subsurface soil and groundwater in the vicinity of the former D-D bulk storage tank has not been adequately investigated by the U.S. EPA. No deep borings or monitoring wells have been drilled in this area. The U.S. Army Corps of Engineers, as design engineers of remedial actions on behalf of U.S. EPA for the Brown & Bryant site, has identified this former bulk tank area east of the warehouse as one of the "areas where additional data are needed". See Figure 1 in Report on the Hydrogeology and the Design of the Proposed Groundwater Extraction System for Brown & Bryant Superfund Site, Arvin, California: Recommendations for Extraction & Handling of A-Zone Groundwater, by the U.S. Army Corps of Engineers, dated 5 August 1994, in Exhibit B. In my opinion, on the basis of the available information on bulk chemical storage, transfer and handling operations, this former D-D bulk

storage tank area is also a Brown & Bryant Source Area.

As detailed in Exhibit A, it is my opinion that the few isolated, very low detections of the chemicals of concern ("COCs") reported in the vadose zone soils on the railroad leased parcel are not the source of the chemicals which are impacting the A-zone groundwater. It is my opinion that the impacted A-zone groundwater, originating from beneath the Source Areas on the Brown & Bryant Property, has over time migrated to the west and south, so that some of it now underlies portions of the railroad leased parcel.

The following finding as stated in the Record of Decision supports these conclusions:

> "The distribution of contaminants was consistent with the locations of the major source areas and follow a pattern consistent with the groundwater flow in the A-zone." See Brown & Bryant, Arvin Facility, First Operable Unit Record of Decision ("ROD"), dated 8 November 1993, page 7.

The Remedial Investigation / Feasibility Study Report describes groundwater flow in the A-zone as follows:

> "Maps of the water table consistently suggest that water moves west and south off the site (Figures 3.6 and 3.7 [of RI])." See RI/FS, page RI-3-5.

The recent declaration by Cynthia Wetmore, the former U.S. EPA Remedial Project Manager ("RPM") for the Brown & Bryant site, states the following regarding groundwater flow in the A-zone:

> "The subsurface investigation has shown that the groundwater in A-zone is migrating into

> the B-zone, but it is also moving generally in the A-zone in a southerly direction in the middle of the facility and a westerly direction in the northwestern boundary of the facility." See Declaration of Cynthia Wetmore in Support of United States' Motion for Summary Judgment, dated 26 May 1998, page 7.

The persistent, strong westerly components in groundwater flow in the A-zone across the western portion of the Brown & Bryant Property and the adjacent railroad leased parcel are illustrated on the A-zone water table elevation maps routinely produced by the U.S. EPA contractor, Ecology and Environment. Inc. ("E&E"). See Exhibit C for the A-zone water table elevation contour maps for sampling dates of 27 February 1995, 6 November 1995, 4 November 1996, and 27 May 1997.

Figure 3.5 of the RI depicts the lithology of the saturated A-zone. See Exhibit D. This map indicates more permeable sands or silty/clayey sands in the southeastern and western portions of the saturated A-zone. Combined with the gradients in the A-zone discussed above, chemical migration to the south and west along these more permeable pathways is expected. EPA concurs in the RI/FS as follows:

> "The pattern of contaminant distribution is consistent with the source areas of soil contamination, with the highest concentrations emanating from the sump and pond areas. The direction of contaminant migration is also consistent with the direction of groundwater flow." See RI/FS, page RI-7-5.

Thus, the patterns of the distributions of COCs in A-zone groundwater as mapped by me previously (see Exhibit A at 24), by E&E in its regular reports of groundwater monitoring results, and most recently by Daniel B. Stephens (see Exhibit E) show the sources of the COC plumes in A-zone groundwater to be from the Brown & Bryant Source Areas. The data depicted on these plume maps show multiple chemicals with overlapping areas of peak concentrations beneath or immediately downgradient of the known Brown & Bryant Source Areas. In all cases, the data depicted on these plume maps show concentrations diminishing radially away from these Source Areas. Further, the data depicted on these plume maps show no significant impacts to A-zone groundwater quality on the northern half of the railroad leased parcel. Given the similarities of these plume configurations for all COCs and my understanding the Brown and Bryant Source Areas, it is my opinion that any detectable COC concentrations on the southern half of the railroad leased parcel are readily explainable as lateral migration from the Brown & Bryant Source Areas.

For example, dinoseb concentrations in groundwater samples from monitoring wells WA-03, WA-04 and WA-05 have been non-detectable over a period of several years. See data in Table 2 in Memorandum from Ralph Lambert of E&E to Michelle Schutz of U.S. EPA, dated 9 February 1998, presented in Exhibit C. These groundwater monitoring data are also mapped by Daniel B. Stephens for monitoring events by E&E in April 1992 and May 1997, and show no occurrences of dinoseb above action levels on the railroad leased parcel except for its extreme southern tip, occurrence of which is clearly resultant from migration from the

nearby Brown & Bryant Source Areas. Therefore, there is no factual basis to conclude releases of dinoseb, if any, originating in soil on the railroad leased parcel have migrated to groundwater resulting in a demonstrable impact.

Even if some molecular level of communication with groundwater has occurred on the railroad leased parcel, the resultant conditions, more likely than not, would not be actionable and did not cause exceedance of maximum contaminant levels ("MCLs"). For example, ethylene dibromide ("EDB"); dinoseb; 1,3-dichloropropane ("1,3-DCP"); chloroform; 1,2-dibromo-3-chloropropane ("DBCP"); and 1,2,3-trichloropropane ("1,2,3- TCP") are routinely non-detectable or well below their respective MCLs or risk based action levels in monitoring wells WA-03, WA-04 and WA-05. Measurable occurrences of these COCs in A-zone groundwater on the railroad leased parcel are readily explainable, as noted above, as migration from the Brown & Bryant Source Areas.

The results cited above for repeated sampling of monitoring wells WA-03 are particularly pertinent in refuting claims expressed by U.S. EPA of chemical migration to groundwater from vadose zone soil on the railroad leased parcel (see U.S. EPA Memorandum from John Lucey to Lisa Castanon dated 9 February 1996). The very low concentrations of chemicals such as 1,2,3-TCP and DBCP reported in soil samples from boring 0 and EDB in boring CA-20 may be laboratory errors or artifacts (see Deposition of Tracey Yerian,[4] dated 1 June 1998, and exhibits, regarding difficulties in calibration of laboratory equipment at FASP laboratory for 1,2,3-TCP and DBCP analyses during March 1990 when boring O was drilled), the result of

sample contamination during drilling or handling, or otherwise not representative of actual soil conditions (see Expert Report by Dr. James Smith). Even assuming that these low detections in vadose zone soil are real, the groundwater sampling results from nearby well WA-03 do not indicate any appreciable chemical migration to groundwater, i.e., levels of these three compounds are consistently non-detectable or below action levels in well WA-03.

Well WA-03 is sufficiently close (within 43 feet of boring O and 11 feet of boring CA-20) and approximately downgradient on many occasions of water level measurements such that any significant chemical migration to groundwater from on-site soil in borings O and CA-20 would be detected in the repeated sampling of groundwater in this well. The A-zone water table elevation maps prepared by E&E indicate a strong westerly flow component in the A-zone groundwater, i.e., toward well WA-03, across the middle of the railroad leased parcel. For example, see the A-zone Water Table Elevation map for 4 November 1996, as prepared by E&E, in Exhibit C.

1,2-DCP is not found in surface soil anywhere on the railroad leased parcel in any borings between the surface and 7-feet below ground surface. 1,2-DCP is found in deeper soil samples on the railroad parcel only in one boring (CA20) out of 19 borings where subsurface soil samples were taken on the railroad leased parcel above a depth of 65 feet, i.e., above the A-zone groundwater table. In that one boring, 1,2 DCP was found at trace concentrations (equal to or less than 80 micrograms per kilogram, "ug/kg" or parts per billion) that are approximately two or more orders of magnitude below the 1,2-DCP concentrations

measured on the Brown & Bryant Property. See Exhibit A, and its Exhibits I-3 and I-4, the cross-sections A-A' and B-B', respectively, for 1,2-dichloropropane concentrations in vadose zone soils.

For the other volatile organic compounds ("VOCs"), EDB, 1,2,3-TCP and DBCP, the soil sample results on the railroad leased parcel are similar to those for 1,2-DCP: non-detectable concentrations in the upper 65 feet of soil on the railroad leased parcel in 17 of 19 borings on the railroad leased parcel. Negligible concentrations of these other VOCs (equal to or less than 50 ug/kg) were reported in only 2 of 19 borings (CA20 and O) drilled on the railroad leased parcel.

After KJC had drilled boring CA-20 on 28 July 1991. E&E installed boring SB-423 on the railroad leased parcel, on 27 October 1991, at a location between prior borings O and CA-20. SB-423 was located 14 feet from boring O and 21 feet from boring CA-20. In boring SB-423, DBCP, EDB, and 1,2-DCP concentrations were non-detectable in all 15 analyzed soil samples taken from the surface to the groundwater table, except for one report of 1,2-DCP at 1 ug/kg at a depth of 33 feet, a result which was "J" and "L" qualified by the laboratory as an approximate value. The duplicate soil sample from SB-423 at the depth of 33 feet did not contain detectable 1,2-DCP. These data from boring SB-423 suggest further that the reported low level detections of certain VOCs in vadose zone boring locations 0 and CA-20 were erroneous or insignificant.

Furthermore, the U.S. EPA has erroneously asserted that there are no known sources on the Brown & Bryant Property of contaminants such as 1,2-DCP upgradient of Well WA-03 (see U.S. EPA

Memorandum from John Lucey to Lisa Castanon dated 9 February 1996). Notwithstanding the possibility of lateral migration of contaminants such as 1,2-DCP in the vadose zone and in the A-zone groundwater from the massive, confirmed chemical releases in the vicinity of the old sump area on the Brown & Bryant Property, there is testimony regarding the leaks and spills of D-D at the location of the old D-D bulk storage tank. This D-D tank was located near the center of the Brown & Bryant Property east of the southern end of the Brown & Bryant warehouse, almost due east of boring O. This tank was used to store D-D without secondary containment as early as 1968. Leaks and significant spills of D-D occurred in this vicinity of the old D-D tank. See Deposition of John Howard Brown, dated 21 April 1998, pages 840 - 842. See Deposition of Lonnie Dean Merryman, dated 17 December 1997, pages 88 - 100. As noted above, the area of these former bulk storage tanks in the central portion of the Brown & Bryant Property has not been adequately characterized, particularly with respect to chemical releases to deeper soils and A-zone groundwater (see Exhibit B).

Finally, the assertions by U.S. EPA that dinoseb migrated to groundwater in the vicinity of borings BB and CC on the railroad parcel and resulted in groundwater contamination, near WA-03 or anywhere else, are totally without support in the data for the following reasons:

- As noted above and supported by the data and graphical depictions in Exhibits A and E, there is no indication of measurable dinoseb occurrence in groundwater on the northern half of the railroad leased parcel after the repeated sampling of

groundwater from the three nearest monitoring wells.

- Although dinoseb is soluble in water at neutral pH, solubility is not the sole factor in determining a chemical's mobility in vadose soil. Chemical migration can be retarded significantly by sorption to soil particles. U.S. EPA's own modeling studies, as reported in the RI/FS, concluded that dinoseb is not mobile in the vadose zone under conditions of normal percolating rainfall:

  "In both modeling scenarios the transport rates for dinoseb were found to be very slow. Impacts to the A-zone groundwater from the current soil contamination were predicted only after over 400 years ..." See RI/FS, page RI-5-13.

  These dinoseb MULTIMED modeling scenarios from the RI/FS were performed with assumptions of extremely elevated dinoseb concentrations, e.g., greater than 100,000 parts per billion in soil, significantly greater than any reported concentrations of dinoseb on the railroad leased parcel. Even assuming these high dinoseb concentrations in the soil, the modeling by U.S. EPA showed dinoseb to be practically immobile.

- The soil sampling data on the railroad leased parcel and the Brown & Bryant Property show significant retardation and vertical attenuation of dinoseb in the vadose zone, except in the locations of the dinoseb spill area and the former waste pond, where there were significant liquid volumes released and the local hydraulic influence of percolating water from unlined sumps and the pond. See Exhibit A and its Exhibits I-1 and I-2.

- The two soil borings, Sl6A and Sl9A, that were drilled adjacent to borings BB and CC, respectively, did not confirm the detections of dinoseb reported in the analyses of soil samples taken from borings BB and CC.

There is no evidence that dinoseb in borings BB and CC or that any other COC in vadose soil on the railroad leased parcel caused contamination of the A-zone groundwater.

1.2 An Algorithm for Divisibility of Groundwater Impacts Can Be Derived

Opinion: *If it were found that releases of chemicals on the railroad leased parcel had migrated to groundwater, the amount, or mass, of contribution from such migration and, thus, cost of its remediation can be calculated as a divisible share of the total chemical mass present in the* groundwater.

1.2.1 Use of Granular Activated Carbon for Groundwater Treatment

The groundwater remedy for the A-zone groundwater selected in the ROD and described in design documents by the U.S. Army Corps of Engineers ("ACE") is groundwater extraction and treatment by granular activated carbon ("GAC") adsorption. See Exhibit F: See ROD at page 25. See Technology Evaluation Report for Brown & Bryant Superfund Site, Arvin, California: Cost Estimates and Expandability Consideration for Groundwater Treatment Plant, Operable Unit 1, by U.S. Army Corps of Engineers, dated 14 June 1994, pages 1 and 8, and Tables 2 and 3 demonstrating GAC to be cost-effective for the Brown & Bryant site. See Draft Invitation for Bids, Design Analysis, Brown & Bryant, Arvin Facility Superfund Site, First Operable Unit, by U.S. Army Corps of Engineers, dated May 1995, at section 2.12.3 on page DA-5 and at section 2.12.3.6 on page DA-7.

All of the COCs detected in groundwater at the Brown & Bryant site can be treated by a common, conventional treatment technology, namely GAC. See Exhibit G, Speth and Milten, 1990. The extent of adsorption of dissolved volatile organic compounds ("VOCs") and other organics onto GAC can be

described by the Freundlich isotherm equation (Speth and Milten, 1990), as listed below:

$$q_c = KC_e^{1/n} \qquad \text{eq(1)}$$

where,

q_c = adsorption coefficient (ug/g)
K = Freundlich isotherm constant [(ug/g) $(L/ug)^{1/n}$]
C_e = dissolved chemical concentration in water in equilibrium with GAC (ug/L)
1/n = Freundlich isotherm exponent (unitless)

According to the Freundlich isotherm equation, the adsorption coefficient (q_c) is the mass of chemical that will be adsorbed onto the GAC when the GAC is in contact with water containing a dissolved chemical at the concentration C_e. The Freundlich isotherm constants "K" and "1/n" are specific to individual chemicals and are dependent on the type of GAC and the water quality. Freundlich isotherm constants for the seven indicator COCs are listed in Table 1 provided in Exhibit G based on U.S. EPA data presented in *Technical Note: Adsorption Capacity of GAC for Synthetic Organics* (Speth and Milten, 1990), a copy of which is also included in Exhibit G. These data are also referenced in U.S. EPA's *NRMRL Treatability Database, Version 5.0* (U.S. EPA. 1994). Printouts from this database of the Freundlich isotherm data for each of the seven indicator COCs, and the associated references for the data, are included in Exhibit G. The constants listed in Table 1 are all based on laboratory tests using Filtrasorb 400 GAC manufactured by

Calgon Corporation. Results using other types of GAC will be different but can be established for any selected carbon source.

The Freundlich isotherm equation presented above and the data listed in Table 1 can be used to estimate the quantity of GAC required to remove a specific COC from groundwater. Assuming the GAC treatment system is designed and operated to approach the equilibrium conditions used to generate the Freundlich isotherm data, the amount of GAC utilized would be equal to the quantity of the COC in the groundwater divided by its adsorption coefficient, as follows:

$$X = 0.0083 \frac{Q \times C_i}{q_c} \qquad \text{eq(2)}$$

where,

- X = mass of GAC required to adsorb the chemical of concern (pounds)
- Q = volume of groundwater treated (gallons)
- C_i = dissolved concentration of chemical i in groundwater (ug/L)
- q_c = adsorption coefficient (ug/g) [from equation (1)]
- 0.0083 = unit conversion factor, assuming a groundwater density of 8.3 pounds per gallon

As an example, the estimated relative GAC usage rates for the seven indicator COCs are listed in Table 2 in Exhibit G based on equations (1) and (2) above, on the Freundlich isotherm parameters listed in Table 1, and on an assumed concentration of 1,000 ug/L in groundwater for each indicator COC entering the

treatment system. The calculated GAC usage rates are presented in Table 2 as the mass of GAC required for every 1,000 gallons of water treated.

Thus, the divisible contributions of chemicals of concern found to originate on any parcel can be normalized as a fraction of the total residual mass of chemicals found in groundwater under the subject properties and adjacent properties weighted by its adsorption coefficient. For each COC, the GAC adsorption coefficient can be established based on published literature values (such as described above) or on bench scale tests.

1.2.2 Estimation of Total Mass of COCs in A-zone Groundwater

A formulation of the divisibility of A-zone remedial costs attributable to any contribution of a COC to groundwater will begin with quantification of the mass of any such contribution relative to the total mass of all COCs found in groundwater. The total mass of each COC in groundwater can be described as the sum of COC mass in the following compartments:

- "Dissolved mass" is that mass of a COC dissolved in the water filled pore spaces of the saturated zone. By definition, the dissolved mass of a chemical is that concentration of a chemical in solution below its solubility times the volume of water present within the water-filled pore spaces. See Cohen, et al., 1993. Dissolved mass of a specific chemical in a defined volume of the saturated zone can be calculated as follows:

$$\text{Dissolved Mass} = C_i \times \quad \times A \times L \times (2.832 \times 10^{-8}) \qquad \text{eq(3)}$$

where,

C_i = dissolved concentration of chemical i in groundwater (ug/L)
θ = water filled porosity (unitless)
A = area of saturated zone (ft^2)
L = thickness of saturated zone (ft)

- "Sorbed mass" is that mass of a COC adhering to the surface of the soil particles present in the saturated zone soils. Sorbed mass is a function of soil and chemical specific properties including the fraction of organic carbon ("foc") of the soil and the sorption properties of the chemical often expressed as the organic carbon partition coefficient ("Koc"). See Cohen, et al., 1993. Sorbed mass of a specific chemical in a defined volume of the saturated zone can be calculated as follows:

$$\text{Sorbed Mass} = C_i \times Koc \times foc \times \rho_b \times A \times L \times (2.832 \times 10^{-8}) \qquad \text{eq(4)}$$

where,

C_i = dissolved concentration of chemical i in groundwater (ug/L)
Koc= organic carbon partition coefficient of chemical i (mL/g)
foc = fraction organic carbon (unitless)
ρ_b = dry bulk density (gm/cm^3)
A = area of saturated zone (ft^2)
L = thickness of saturated zone (ft)

- "DNAPL mass", i.e., the dense non-aqueous phase liquid mass, is that mass of a COC present in the pore spaces of the saturated zone as undissolved

liquid. The DNAPL mass can be estimated based on the properties of the saturated zone and the chemical. The DNAPL mass is calculated as the volume of DNAPL in the saturated zone multiplied by the density of the DNAPL. See Cohen, et al., 1993.

- The "total mass" of chemicals present in groundwater can be estimated as the sum of the dissolved mass and mass sorbed to saturated zone soils plus the DNAPL mass present as follows:

  Total Mass = Dissolved Mass + Sorbed Mass + DNAPL Mass eq(5)

I have made estimates of the dissolved mass and sorbed mass of the seven indicator COCs in the A-zone groundwater beneath the Brown & Bryant site. The indicator COCs are the following: 1,2-DCP; 1,2,3-TCP; DBCP; chloroform; 1,3-DCP; EDB and dinoseb. The dissolved masses and sorbed masses of each of these COCs are estimated from the plume maps of COC occurrence in the A-zone groundwater as depicted by Daniel B. Stephens for the most recent available data set: May 1997 for all COCs except dinoseb for which November 1996 was the most recent valid data set. See Exhibit E.

As summarized in Exhibit H, the dissolved mass for each COC can be calculated with equation (3). The sorbed mass for each COC can be calculated with equation (4). The input values for site-specific saturated zone parameters and chemical specific parameters are listed in Tables 1 and 2 in Exhibit H. For example, the A-zone saturated thickness is assumed to be 10 feet, and the formation porosity is assumed to be 40 percent in accordance with

information provided in the RI/FS. EPA has estimated the saturated thickness of the A-zone below the Brown & Bryant facility to range from 0 to 10 feet thick, with an average of 4.5 feet. See RI/FS, page RI-3-6. The water filled volumes of the A-zone saturated thickness are calculated for each COC concentration contour interval shown on the Daniel B. Stephens figures found in Exhibit E. The annular areas, in square feet, between contours on these figures are integrated by computer using AutoCAD Release 14 (see figures presented in Exhibit H). Tables 3 through 9 present the calculations for dissolved and sorbed masses for each of the indicator COCs (see Exhibit H).

Using the parameters and maximum values noted above and in Exhibit H, the sums of the estimated dissolved mass and sorbed mass of each indicator COC in A-zone groundwater are as follows:

Chemical of Concern	Dissolved Mass (kg)	Sorbed Mass (kg)	Total Mass (kg)
1,2-DCP	418	85	503
1,2,3-TCP	25	7.2	32
DBCP	3.7	2.1	5.8
chloroform	3.2	1.1	4.3
1,3-DCP	1.0	0.56	1.6
EDB	0.14	0.037	0.18
dinoseb	6.5	3.2	9.7
TOTAL	458	99	557

The above estimated masses exclude any DNAPL masses determined to be present in the A-zone groundwater. If DNAPL mass is judged to be present, the Total Mass present in the A-zone groundwater can be calculated from equation 5 above. Excluding DNAPL mass, the sum of the dissolved and sorbed masses for the seven indicator COCs is approximately 557 kilograms, or 1,220 pounds.

1.2.3 Estimation of Fraction of Groundwater Remedial Action Costs Attributable to a Mass Input

All of the indicator COCs are amenable to groundwater extraction and treatment by GAC in accordance with the remedy selected in the ROD, as discussed above. Therefore, the relative fraction of COC mass contribution from any specific source or geographic area, when determined, can be calculated as follows:

$$\text{Mass Fraction Contribution} = M_i / \text{Total Mass} \qquad \text{eq(6)}$$

Where,

M_i = the mass of chemical "i" determined to originate in a separate source or area Total Mass = the sum of the mass of all chemicals determined by equation (5)

If DNAPL mass is determined to be present, it can be included in the denominator in the total mass according to equation (5).

Using the approach outlined in the prior section, this mass fraction determined for any particular COC, weighted by its relative carbon adsorption coefficient if desired, could be used to evaluate the predicted incremental consumption of GAC at the groundwater treatment facility. Thus, a divisible contribution to remedial action costs is possible based on such a COC contribution from any specific source or specific area where the mass of that COC discharged to A-zone groundwater is separately determined.

The relative mass fractions for each indicator COC that are present within the A-zone concentration contours are also stated in Tables 3 through 9 in Exhibit H. It can be seen from the relative mass fractions for each concentration interval in Tables 3 through 9 that the overwhelming majority of the total chemical masses reside in the high concentration areas in proximity to the Brown & Bryant Source Areas. For example, for 1,2-DCP, 99% of the combined, dissolved and sorbed mass is located in the A-zone high concentration area within and greater than the 1,000 parts per billion, "ppb", contour, which is located beneath, south and west of the Brown & Bryant Source Areas (see 1,2-

DCP figure in Exhibit H). This predominant mass fraction of 1,2-DCP within the high concentration area beneath and near the Brown & Bryant Source Areas would be significantly greater if DNAPL mass were included.

This finding of overlapping centers of chemical masses for multiple chemicals further supports the conclusion that massive releases of these COCs occurred in the Source Areas and that lateral dispersion and migration accounts for the observed declining peripheral concentrations of COCs detected in A-zone groundwater. There are no separate peak concentration areas outside of the identified Source Areas on the Brown & Bryant Property that suggest any additional significant sources of A-zone groundwater contamination. U.S. EPA's groundwater monitoring data for wells WA-03, WA-04 and WA-05 repeatedly indicate non-detectable or low concentrations consistent with the plume configurations discussed above, i.e., there is no suggestion in the data of significant dissolved or sorbed mass contribution in the A-zone groundwater below the railroad leased parcel.

JA-365

[Trial Exhibit G-6]

Expert Opinions of

Daniel B. Stephens, Ph.D, P.Hg., R.G.

In the matter of

The Atchison, Topeka & Santa Fe Railroad

Company, et al. vs.

Brown & Bryant, Inc. et al.

July 8, 1998 /s/Daniel B. Stephens
[Certified Hydrogeologist]
[stamp from State of]
[California]

[logo omitted] Daniel B. Stephens & Associates, Inc.
6020 Academy NE, Suite 100•
Albuquerque, New Mexico 87109

* * *

1.3 History of Chemical Use and Storage

Brown & Bryant operated an agricultural chemical dealership in Arvin, California, from 1960 through 1988. Up until 1975, they operated on the eastern portion of the site ("Brown & Bryant Property," Figure 1), an area of approximately 3.8 acres. It is apparent from a 1967 aerial photograph (Figure 2) that there was a large-scale operation on the Brown & Bryant property long before the lease property was acquired. In December of 1975, a one-acre parcel to the west of the Brown & Bryant property was leased from the Railroads (leased property) for the purpose of parking fertilizer rigs.

Brown & Bryant was engaged in the sale, distribution, and application of fertilizers, pesticides (including insecticides and fumigants), fungicides, and herbicides from 1960 through 1988. Operations included receipt of bulk and prepackaged products, sale to local farmers, and assistance to farmers in applying the products. Prepackaged products were stored in the warehouse on the western portion of the property (Canonie Environmental [Canonie], 1988a, p.3). Brown & Bryant handled a range of pesticides and herbicides; however, the primary products that contain chemicals of concern (COCs) are presented in Table 1.

Chemicals arrived at the site by truck or rail. After the railroad tracks were decommissioned in 1975, chemical products typically arrived at the site by truck (Canonie, 1988a, p.3), and bulk product was transferred into on-site holding tanks.

Gross contamination of the soil and groundwater resulted primarily from poor housekeeping and

releases to a surface pond and sumps (U.S. EPA, 1993b, p.3). A variety of poor housekeeping practices led to contamination of both soil and groundwater, as will be discussed in subsequent sections of this report. Leaks of prepackaged product were common, for example, in the warehouse. Spills occurred while bulk product was unloaded and transferred to on-site tanks. On-site tanks were not properly maintained and were allowed to leak. Spent product containers were crushed on bare ground and allowed to ooze residual product into the soil. All of these practices over almost 30 years of operation culminated in contamination of both soil and groundwater on the Brown & Bryant property.

In addition to poor housekeeping practices, the two major sources of contamination to soil and groundwater at the site were a sump and a pond (Figure 1). Both of these structures were unlined from 1960 through 1979 and introduced large amounts of pesticide- and herbicide-laden liquids into the subsurface soil beneath them and subsequently into groundwater. A large plume of contaminated soil and groundwater exists beneath each of these structures. As much as 2,000 to 4,000 gallons of rinse water were input to the sump each month (Sturgess, 1983; Prine, 1989, p.8). A consultant for Brown & Bryant (Sturgess, 1983) indicated that the rinse water contained "... DNBP [Dinoseb], Telone, D-D [1,2-DCP, 1,3-DCP, and 1,2,3-TCP (Spectrum, 1998; NIH, 1998)], Prowl, Treflan, Diazinon, Imidon, and Guthion." These chemicals are considered hazardous, and rinse water may have contained contaminant levels many orders of magnitude above regulatory limits. In fact, laboratory measurements from samples of rinse waters indicated

that they were considered hazardous (McLaughlin, 1983b).

On at least two occasions, regulators noted these poor housekeeping and waste-handling practices. The California Department of Health Services (DOHS, 1983) characterized the housekeeping at the facility as "very poor" in a May 25, 1983, hazardous waste management report. The report cited the following observations:

- "Hazardous wastes (pesticide rinse waters) disposed of on-site in a pond with no DOHS permit or authorization...
- Hazardous waste disposed of with no hazardous waste manifest (empty containers, defective materials)
- There are numerous spills of fertilizer compounds, pesticides, herbicides, oils, etc. most on dirt
- Empty and partially full waste containers are stored on dirt, many in deteriorated condition
- Wash rack drain was plugged and ready to overflow to dirt

2. Opinions

Based on my analysis of site conditions, as well as a review of depositions and technical reports that have been developed for the site, it is my opinion that:

1. Groundwater contamination reported beneath the leased property is the result of hazardous substances released on the Brown & Bryant property and was not caused by releases at the surface of the leased property.

2. Sampling data relied upon by the U.S. Environmental Protection Agency (EPA) do not show that releases of hazardous substances on the surface of the leased property have communicated with groundwater beneath the leased property.

3. The reported releases of hazardous substances at the leased property did not trigger response costs, and will not trigger any costs in the future.

A complete discussion of the information and analyses that have led me to these conclusions is provided in Sections 2.1 through 2.3.

2.1 Groundwater Contamination Reported Beneath the Leased Property Is the Result of Hazardous Substances Released on the Brown & Bryant Property and Was Not Caused by Releases at the Surface of the Leased Property

The bases for this opinion are the chemicals in groundwater on the leased property, sources of releases on the Brown & Bryant property, soil contamination on the Brown & Bryant property, contaminant distribution and migration in groundwater, and modeling of contaminant transport in groundwater from the Brown & Bryant sources to the leased property.

There are two water-bearing units of interest, the A-zone and B-zone groundwater. The term A-zone refers to the first groundwater encountered beneath the leased and Brown & Bryant properties, at a depth of approximately 70 feet below ground surface (bgs). The saturated portion of the A-zone is composed of thinly

bedded clays, silts, and sands, and averages about 5 feet thick (U.S. EPA, 1993b, pp. RI-3-4 and RI-3-6). The B-zone refers to a deeper aquifer where groundwater is encountered at a depth of approximately 160 feet bgs (Ecology and Environment, Inc., 1998). The B-zone is composed of silty sands to gravelly sands, and extends to depths greater than 200 feet (U.S. EPA, 1993b, p.RI-3-7). The B-zone is part of the regional aquifer system, whereas the overlying A-zone is likely perched on relatively low-permeability silt and clay. At present, the direction of groundwater flow in the A-zone is generally to the west and southwest. But, groundwater also leaks downward from the A-zone and recharges the B-zone. According to the Record of Decision (ROD) (U.S. EPA, 1993a), remediation of the A-zone is necessary in order to protect the B-zone from further contamination.

2.1.1 Organic Chemicals in Groundwater Beneath the Leased Property Are the Same as Those Found in Groundwater and Soil Beneath the Brown & Bryant Property

The commonly occurring COCs in groundwater beneath the leased property include 1,2-dichloropropane (1,2-DCP), 1,3-dichloropropane (1,3-DCP), 1,2,3-trichloropropane (1,2,3-TCP), chloroform, dibromochloropropane (DBCP), ethylene dibromide (EDB) and 2-sec-butyl-4,6-dinitrophenol (Dinoseb). Except for 1,3-DCP, this group comprises the COCs that drive remediation, according to EPA in its ROD (U.S. EPA, 1993a; p.12).

All of these chemicals are present in large quantities in both soil and groundwater on the Brown & Bryant property. As discussed below and throughout this document, the quantity of hazardous chemicals

reportedly released at and found in soil and groundwater on the Brown & Bryant property today dwarf the quantity found on the leased property. Therefore, I conclude that COCs in groundwater beneath the leased property are the result of significant upgradient source areas on the Brown & Bryant property.

This opinion is based on analyses from monitor wells WA-3, WA-4, WA-6, and WA-7, which were sampled periodically from 1990 through 1997 (Tables 2a and 2b). (Although an additional sampling event occurred in January of 1998, EPA has not yet provided these data.)

The locations of monitor wells WA-3, WA-4, WA-6, and WA-7 are presented in Figure 3. Actually, only WA-3 and WA-4 are located on the leased property. Monitor well WA-6 is on the west side of the Brown & Bryant property, and monitor well WA-7 is located off-site, just west of the leased property. Because wells WA-6 and WA-7 straddle the southern part of the leased property and contain the COCs discussed above, and based on my knowledge of the hydrogeology of this site, I conclude that the same COCs are also present in groundwater beneath the southern part of the leased property. As will be discussed later, all seven COCs occur in groundwater only in this southern section of the leased property. Only some of the chemicals have been detected in WA-3 and WA-4 in the central and northern part of the leased property, and when detected, their concentrations are always much lower than in the southern part in wells WA-6 and WA-7 (Figure 4). Concentrations of the same COCs in upgradient monitor wells on the Brown & Bryant property are much higher.

2.1.2 *The COCs Driving Remediation Are Associated with Storage, Intentional Releases, and Spillage to Disposal Facilities on the Brown & Bryant Property*

Brown & Bryant stored a variety of chemicals at various areas on the site. The number and types of tanks and the locations of open storage that occurred during the history of the Brown & Bryant property are many and varied. U.S. EPA (1989) discusses the state of the site at several times during its operational history. In 1961, the site had "13 uncontained vertical tanks, 2 uncontained horizontal tanks,...and open storage of unidentified objects." By 1973, "the main storage area now contains six uncontained vertical tanks." By 1975, "the most significant feature is the large amount of open storage areas containing crates, 2 drum storage areas, 27 horizontal tanks, 15 vertical tanks, [and] unidentified cylindrical objects..." EPA also identifies 10 uncontained vertical tanks (Figure 5). U.S. EPA (1993b) also states that beginning in the mid-1970s, tanks and drums were stored along the eastern fence line. By 1981, "There are apparently no areas set aside for open storage but instead the entire facility is being used and storage is random. Scattered throughout the site are numerous crates, 33 horizontal tanks, 11 vertical tanks, a railroad tank truck being used for storage, ...7 tanks trucks, 10 pressure tanks, uncontained drum storage, and numerous unidentified objects." A "large spill stain" is visible in the main chemical storage area with "10 uncontained vertical tanks" (Figure 6). Thus, it is apparent that storage was sloppy and haphazard on the Brown & Bryant property; releases occurred often, and spillage was common.

Containers noted in the storage area during a July 28, 1983, site visit by California DOHS staff (McLaughlin, 1983a) included Prowl [Pendimethalin, or N-(1-ethylpropyl)-2,6-dinitro-3,4-xylidine, a selective herbicide used to control annual grasses and certain broadleaf weeds], Eptam [EPTC, or S-ethyl dipropylthiocarbamate, a selective herbicide used to control annual grassy weeds, perennial weeds, and some broadleaf weeds], Tillam [Pebulate, or Butylethylcarbamothioic acid S-propyl ester, a selective herbicide], Roundup [Glyphosate, or N-(Phosphonomethyl)glycine, a nonselective, systemic herbicide used to control annual and perennial plants including grasses, sedges, broad-leaved weeds, and woody plants], Pydrin [Fenvalerate, or α-cyano-3-phenoxybenzyl-2-(4-chlorophenyl)-3-methylbutyrate, a synthetic insecticide that is used on a variety of pests such as moths, flies, beetles, and other insects], Copper Count N [copper ammonium carbonate], Caparol [Prometryn, or N,N^1-Bis(1-methylethyl)-6-methylthio-1,3,5-triazine-2,4-diamine, a selective herbicide used to control annual grasses and broadleaf weeds], BeeBee Weedkiller D [Dinoseb], Parathion [O,O-diethyl O-p-nitrophenyl phosphorothioate, a broad spectrum pesticide used to control many insects and mites], Malathion [(Dimethoxyphosphinothioyl)thio]butanedioic acid diethyl ester, a nonsystemic, broad spectrum insecticide], Kelthane [Dicofol, or 1,1-bis(p-chlorophenyl)-2,2,2-trichloroethanol, a miticide used on many fruit, vegetable, ornamental, and field crops], Treflan [Trifluralin or α,α,α-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine, a selective herbicide used to control many annual grasses and broadleaf weeds in a

variety of tree fruit, nut, vegetable, and grain crops, including soybeans, sunflowers, cotton, and alfalfa], Dinitroamine [Dinitramine or N^4N^4-Diethyl-α,α,α-trifluoro-3.5-dinitrotoluene-2.4-diamine, a selective preemergence herbicide used for many annual grasses, broadleaf weeds in cotton, ground-nuts, soybeans, and sunflowers], Duter [Triphenyltin hydroxide, or hydroxytriphenylstannane, a fungicide and antifeeding compound for insect control], Devrinol [Napropamide, or N,N-diethyl-2-(1-naphthyloxy)propionamide, a selective systemic herbicide used to control some annual grasses and broad-leaved weeds], Betami[x] [Phenmedipham, or 3-(Methylphenyl)carbamic acid 3-[(methoxycarbonyl)amino]phenyl ester, a herbicide], Maneb [ethylenebis(dithiocarbamato)]manganese, a fungicide used to control early and late blights on potatoes and tomatoes as well as many other diseases of fruits, vegetables, field crops, and ornamentals], Premerge-3 [Dinoseb], and Temik [Aldicarb, or 2-methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime, a very toxic systemic insecticide] (Chemical data were taken from EXTOXNET [1998], Chemfinder [1995], the Merck Index [Budavari, 1989], and the Farm Chemicals Handbook '95).

Nemagon (DBCP) that had been reformulated and repackaged as "BeeBee Nemagon" at the Brown & Bryant Shafter facility was delivered to the Arvin facility in 5- and 30-gallon containers (Brown, 1998, p.815). However, the Arvin facility primarily dealt in the products containing 1,2-DCP, 1,3-DCP, and 1,2,3-TCP known as D-D, rather the DBCP-based product Nemagon (Brown, 1998, pp.817-818). D-D was stored in a bulk tank (Figure 1, Tank C) north of the sump area from 1960 through 1981 until Tank D and the

concrete containment area were built (Hargis + Montgomery, Inc., 1984a). D-D was stored in Tank D until it was banned in 1984. In about 1979, Nemagon as sold by Shell was withdrawn from the market (Brown, 1998, p.820). EDB was delivered to the site in bulk tanker truckloads of approximately 5,000 gallons and stored on the Brown & Bryant property in a bulk tank (Brown, 1998, pp.821-822).

2.1.2.1 Releases During Facility Operation

Unequivocally, releases from the sump and pond occurred because (1) the facilities were used for roughly 20 years without protective liners, (2) the underlying soils are moderately permeable, and (3) the chemicals are found in the underlying soils in high concentrations.

Rinsing of chemical storage tanks was the primary operation that led to these releases. Because tanker trucks typically carried a variety of materials, they had to be washed out before being loaded with a different product. The tanker trucks were rinsed on concrete pads, and the rinsate drained into the unlined sump (Canonie, 1988a). For example, tank trucks, kit tanks, and nurse tanks that had contained D-D were washed out into the unlined earthen sump (Brown, 1998, p.830; Dickey, 1998, pp.30-32).

The location of the first sump area is shown in Figure 1 in the south-central part of the Brown & Bryant property. At least until about 1975, EPA identified the sump as a broad depression in the vicinity of the wash pads (U.S. EPA, 1993b, Figure 1.3 [see Figure 1] and U.S. EPA, 1989, Figure 6 [see Figure 5]). The dimensions of the unlined sump were approximately 100 by 75 feet, with an area of approximately 6,300 square feet and an unknown depth (U.S. EPA, 1993b,

Figure 1.3). Overflow from the sump was routed through a 4-inch polyvinyl chloride pipe to an unlined surface impoundment in the southeast part of the property (Canonie, 1988a). According to Merryman (1997, p.151:5), every winter "it would flood down at the southeast end where the sump was. Before they put the lined sump in and raised it up and built it up, it used to be one big pond out there. You couldn't tell where the sump was and where it wasn't."

In early 1980, the unlined sump was replaced with the double-lined sumps 1 and 2, which consisted of two prefabricated concrete boxes placed side by side (Figure 1) in order to curtail seepage. At the same time, two double-lined sand traps were installed west of the pond (Canonie, 1988a). The reported dimensions of each of the sumps and sand traps vary from 7 to 8 feet wide (Smith & Associates, 1983; Brown, 1998, p. 790) by 12 feet long (Brown, 1998, p. 790), and by 8 to 12 feet deep (Brown, 1998, p. 790; Canonie, 1988a).

In 1984, both wash pad drains, which drained to sumps 1 and 2, were plugged, and in 1987 the sumps were excavated and backfilled (Canonie, 1998a). In their place, a contained rinse system with a concrete pad was constructed at the north-central part of the Brown & Bryant property (Figure 1). The contained rinse area included a wash area and a northern and a southern sump. The northern sump and wash area were used for cleaning tanker trucks that transported pesticides. Water from the northern sump was stored temporarily in a 5,000-gallon polyethylene tank located between the north and south wash areas. The southern sump and wash area were used for cleaning vehicles that transported fertilizers. Water from the sump was

pumped into a 130,000-gallon water storage tank (Canonie, 1988a).

The pond was constructed in 1960 when the site initially became operational. The unlined pond had a surface area of about 8,200 square feet (0.2 acre), and when full, the free liquid depth in the pond was roughly 10 feet deep (Smith & Associates, 1983). From 1960 through 1979, the unlined pond was used to collect rinsate from the wash pad and rainwater runoff from the yard (Merryman, 1997, p.26). Rainwater that collected in the pond was likely contaminated because it contacted site surface soils contaminated by surface spills. During the rainy season in Arvin, the maximum volume of the pond was estimated to be 120,000 gallons. During the early 1970s, the pond overflowed and breached the east fence line berm. Water collected in a low area to the southeast of the pond (U.S. EPA, 1993b). In November of 1979, the pond was lined with a synthetic liner. However, the California DOHS found the liner thickness inadequate (DOHS, 1983). During the late summer and fall of 1987, contaminated soils were excavated from the pond, the original liner was removed, and another liner was then installed (Prine, 1989). A flood in October of 1987 or 1988 lifted the liner from its foundation (Leary, 1997, pp.128-130; Mack, 1998, pp.49-50). Subsequent soil and groundwater sampling in the vicinity of the sump area and the pond show all COCs present at extremely high concentrations.

The majority of the operating period of the sump and pond occurred prior to December of 1975, when the leased property became active. Given the large amount of contaminated water that was disposed of in the sump and pond, contaminants would have begun to

reach the A-zone groundwater soon after the Brown & Bryant facility became operational. Therefore, I conclude that the majority of releases to soil and groundwater from the sump and pond occurred prior to the railroad's lease agreement with Brown & Bryant.

2.1.2.2 Releases From Spills and Leaks

Deposition testimony indicates that bulk product was transported in liquid form from suppliers such as Shell Chemical Company or Dow Chemical Company, who transferred the product to on-site storage tanks (Dickey, 1998, pp.15 and 28). Brown & Bryant drivers filled their tank trucks or pull rigs (tank on a bed towed by a truck) with fumigants from the storage tanks (Dickey, 1998, pp.26-28). Christopher Weden, the EPA on-scene coordinator, reported that "some of the tanks had small corroded holes that could have resulted in leaks from the tanks" (Weden, 1998, p.8). The locations of storage tanks are shown in Figure 1.

Leaks at the D-D tank were common due to the corrosive nature of this chemical (Brown, 1998, pp.840-841). The tank was set on a bed of gravel, which was in direct contact with bare soil (Brown, 1998, p.845). This placement would have provided a direct conduit to subsurface soils (Swain, 1998, p.128). Spills also commonly occurred as the tanks were filled by suppliers and as smaller tanks were filled by Brown & Bryant drivers. For example, Charles Dickey recounts an incident that occurred during a delivery where a hose transferring D-D from one tank to another was over-pressurized, blew out of the tank, and spilled approximately 10 gallons of D-D onto the ground (Dickey, 1998, pp.21-25). Merryman (1997, pp.91-94) stated that he had observed spills as large as several gallons on bare ground just east of the D-D tank.

Darkened areas in the vicinity of the bulk storage area visible in a 1981 aerial photograph (Figure 6) are soil stains likely attributable to spills of product. Similar stains are visible in the photograph taken June 15, 1960 (Figure 7).

Dinoseb, a weed killer, was brought to the site in liquid form in 5-gallon containers, stacked on pallets, and stored in the warehouse on the northwest side of the Brown & Bryant property (Brown, 1998, pp.852-853). The warehouse was constructed in 1960, and a narrow concrete pad was added to the west side of the warehouse in 1976 after Brown & Bryant leased property from the Railroads. This long narrow concrete pad is located mostly on the leased property (see Figure 1).

Dinoseb spills were common in the warehouse because the Dinoseb "ate right through the 5-gallon cans fast" (Brown, 1998, p.852). Sometimes those spills would be washed down (Brown, 1998, p.853), which may have facilitated transport of the Dinoseb through joints or cracks in the concrete floor to the soil below. Dinoseb was also commonly stored on the concrete pad west of the warehouse (Brown, 1998, p.854). Spills on the concrete pad or Dinoseb-contaminated kitty litter would be swept off the west side of the open storage area into the vicinity of borings BB and CC. Brown (1998, p.986) stated that "Every once in a while, a can would ...leak on the concrete pad. ...[T]here would be a big puddle of Dinoseb on there[, and] kitty litter would be put on that, and then it would be swept off onto the railroad property or washed off onto the railroad property" (Brown, 1998, p.986). Apparently this happened "three or four times at least" (Brown, 1998, p.987).

One Dinoseb spill in particular, which was described as "making a big mess" (Brown, 1998, p.856), occurred in the southeastern portion of the warehouse. Field reports (Roger McClaflin, 1998, pp.45 and 51) disclose the presence of a yellow substance beneath the concrete floor of the warehouse that is generally consistent with the description of Dinoseb; however, no soil samples were collected of this material (ICF, 1991, p.15).

Empty cans of Dinoseb (as well as other products) were crushed in the can crushing area (Figure 1). These included 1-, 2 1/2-, and 5-gallon cans (Merryman, 1997, p.84). John Brown stated that "I've seen that fence where you couldn't see the fence it was so lined with [empty] cans" (Brown, 1998, p.940). According to Merryman (1997, pp.84-85) "when they started crushing...the five-gallon cans, the ground would get kind of messy back there." In fact, the area where the can crushing took place was described as 3 inches deep "in mud and liquid" (Merryman, 1997, p.89). Initially, the cans were stored and crushed on the bare ground, but in 1979 or 1980, an 8- by 10-foot concrete slab was constructed to hold the empty can prior to crushing. However, the cans were still crushed over bare ground, most likely in the topographic low between the slab and the UN-32 tank. After the cans were crushed, they were sent to a landfill (Merryman, 1997, pp.86-87). As well as being stored in the can crushing area, empty cans were apparently stored throughout the site (see open storage areas in Figure 5).

Dinoseb was also stored in bulk form in a tank located along the east fence line, known as Tank 8. A number of Dinoseb spills have been documented from Tank 8, just northeast of the pond (Figure 1). A passage from a

memo detailing a July 28, 1983 site visit by DOHS (DOHS, 1983) states that "Mr. Brown also mentioned...that they had a Dinoseb spill from Tank 8, again, the previous day." In a September 20, 1983 memo (McLaughlin, 1983b), the DOHS indicated that "Mr. Bullard, a yard foreman for Brown & Bryant, stated at the time of inspection that the tank had leaked over a long period of time." Figure 8 shows the distribution of Dinoseb beneath this spill area.

2.1.3 Soils on the Brown & Bryant Property Have Been Extensively Impacted

Surface soils on the Brown & Bryant property have been extensively impacted by releases on the Brown & Bryant property. Surface soils are defined as soils within 7 feet of land surface in the ROD (U.S. EPA, 1993a, p.13). The occurrence of Dinoseb surface soil contamination that requires remediation is confined exclusively to the Brown & Bryant property; contaminant levels in surface soils on the leased property are too low to require remediation, according to cleanup requirements presented in the ROD (Figure 9). Subsurface soils on the Brown & Bryant property have been extensively impacted by releases there to depths as great as 150 feet bgs. These impacted soils act as a continuing source of contaminants to groundwater beneath and downgradient from the Brown & Bryant property (Figures 8 and 14 through 20). In addition, it is clear that contamination from upgradient sources on the Brown & Bryant property has impacted soils beneath the leased property (see Figures 14, 15, and 16).

There is an excellent correlation between the occurrence of surface soil contamination and known operations on the Brown & Bryant property that led to

those releases, such as near the former sump and pond and Dinoseb spill area at Tank 8. However, on the Brown & Bryant property, several other areas have not been sufficiently investigated with soil sampling, including (1) soils near the contained rinse system, (2) soils in the vicinity of the D-D tanks, (3) soils around the tank farm south of the contained rinse system, (4) stained soils around the east side of the warehouse (Figure 10), and (5) the drum storage area north of the warehouse (Figures 5 and 7). Other incompletely investigated potential sources include soils along the piping that joins the sump and pond (Figure 1) and the can crushing area (Figure 10). A work plan prepared by Canonie (1988b) showed a proposed sampling grid that would have evaluated some of these areas; however, most of the proposed locations were never sampled by EPA's contractor. Figure 11 highlights the large area on the Brown & Bryant property that has not been characterized. Figures 12 and 13 show the location of chemical tanks, facilities, and stained soil areas in the northern half of the Brown & Bryant property with the uncharacterized area overlain. In fact, the lack of proper characterization in the vicinity of the bulk tanks was specifically discussed in the minutes from a January 4, 1990 meeting between EPA and Ecology and Environment, Inc. (Woody, 1998, Exhibit 4, p.2). The memo states that

> "Tank Area had only one boring; at least two more borings are need [sic] in the area and near the former storage area (just south of the large tank)
>
> The 1989 aerial photograph showed a stain in the tank area extending to the former storage area."

Consequently, it seems likely that additional releases may have occurred, and therefore there are significant source areas that have not been characterized.

Deep soil samples (below 7 feet) show that releases on the Brown & Bryant property clearly impacted both deep soil and groundwater (Figures 14 through 20 and Appendix C). The fumigant constituents 1,2,3-TCP, 1,2-DCP, 1,3-DCP, DBCP, and EDB occur in soil primarily in the vicinity of the sump. Dinoseb occurs in soil primarily near the surface in the vicinity of the Dinoseb spill area (Figures 8 and 21), and at several other surface locations (SS-411, SS-110, and SS-105).

In the southeast part of the Brown & Bryant property, soil beneath the Dinoseb spill area at 10 feet bgs in boring C contains 5,100,000 micrograms per kilogram (µg/kg) of Dinoseb, which is about 60 times greater than the surface soil cleanup criterion (80,000 µg/kg). Although much of the Dinoseb spill mass released in 1983 has remained in soil in the vicinity of the spill, impacts have occurred to at least 50 feet bgs, the maximum boring depth, where Dinoseb concentrations reach about 189 µg/kg in boring AA.

On the Brown & Bryant property, note the high concentration of COCs throughout the vadose zone, within the A-zone groundwater, and below the A-zone to depths of 150 feet (Figures 14 through 20). Concentrations of 1,2-DCP and DBCP near the sump and of Dinoseb near the sump and Dinoseb spill area are so large that dense nonaqueous-phase liquid (DNAPL) likely exists in the soil. In fact, the significant depth of liquid fumigant migration below the sump and pond is in part caused by the high density of DNAPLs and their propensity to move downward through the soil column under the influence of gravity.

The continuous release of water containing dissolved contaminants and dense liquids to the unlined sump and pond created a local head of liquid that seeped for nearly 20 years, causing deep migration of the COCs. Even after the sump and pond were lined, DNAPLs and dissolved-phase contaminants in soil would slowly drain by gravity toward the water table, leaving the residue behind in soil. Releases from these and other sources at the Brown & Bryant facility migrated through soil to groundwater and then westerly in the A-zone to areas beneath the leased property (Section 2.1.4).

Soils on the leased property likely were impacted by surface releases on the Brown & Bryant property that washed by surface runoff from potential sources north of the warehouse onto the leased property (Figure 22). For example, note the elevated Dinoseb concentration (7,000 µg/kg) in the surface sample at boring S, which is located about 40 feet north of the drums that were visible in 1960 at the north end of the warehouse (Figure 7). It is probable that the Dinoseb first migrated onto the leased property from the Brown & Bryant property by a surface pathway prior to 1975. Field inspection of the area reveals decomposed asphalt (Figure 23) and corrosion at the base of the metal siding on the northwest corner of the warehouse. These effects were likely caused by corrosive chemicals such as Dinoseb, although no soil samples were collected beneath the drum storage area; consequently, soil concentrations may have been much greater than at boring S.

Soil from borings BB and CC, on the northeast edge of the leased property adjoining the warehouse, contains reported concentrations of Dinoseb as high as 16,572

µg/kg. These borings are located downslope from this drum storage area (Figure 22). Deposition testimony indicated that the corrosive Dinoseb was also stored on the concrete pad west of the warehouse and that spillage would be swept onto the leased property (Brown, 1998, Section 2.1.2.2).

Additionally, after December of 1975 vehicles entered the north gate to the Brown & Bryant property and traveled across the north end of the warehouse drum storage area, and possibly across the area where Dinoseb was washed off the concrete pad, to reach the west side parking lot. Chemicals in soil from releases on the Brown & Bryant property would have been transported and dispersed to the leased property on the tires and undersides of the vehicles.

When the site was initially leased by Brown & Bryant, it was oiled to seal the surface (Merryman, 1997, p.22). Apparently, this was done every year thereafter (Merryman, 1997, p.154). In fact, Brown & Bryant's consultant reported that "Few, if any, agricultural dealers have...as extensively oiled yards as Brown & Bryant" (Sturgess, 1983). Based on a review of boring logs, asphalt was encountered at locations O, R (Ecology and Environment, Inc., 1990, Appendix H), WA-4, and CA27 (Kennedy/Jenks Consultants, 1992) on the leased property. During my inspection of the site, I confirmed that asphalt covers the leased property. Leary (1997, p.140) states that rainfall ponded on the site, rather than infiltrating, because the site had been oiled. Therefore, infiltration of surface spills, if any, was inhibited because the site surface was covered with oil and asphalt.

2.1.4 Contaminant Distribution and Migration in Groundwater Indicate That Sources on the

Brown & Bryant Property Are Responsible for Observed Groundwater Contamination

Since groundwater monitoring began in 1990, the A-zone groundwater flow direction has been west-northwest, and southwest and south beneath the Brown & Bryant property. Figures 24 through 34 show groundwater elevations for the A-zone from 1991 to 1998. Arrows on the maps show the direction of the hydraulic head gradient, and hence the direction of groundwater flow that transports contaminants in the A-zone. The direction of groundwater flow varies in time and in location at the site. In the northern part of the Brown & Bryant property, groundwater flows mostly to the west, whereas, in the southern part of the property, the flow direction is more to the south or southwest.

2.1.4.1 Historical Flow Directions

It is significant that the available groundwater level data (1990 through 1998) do not reflect the direction of groundwater flow for the period 1960 to 1980 when the majority of the releases occurred from the Brown & Bryant facilities. During this period, the chemical-laden liquids seeped from the unlined sump and pond into the A-zone groundwater. At least from about 1952 to 1968, a water-filled sump apparently from a potato processing facility was also located southwest of the site about 200 feet west of the pond (Figure 2a). This local seepage created a groundwater mound on the water table. Groundwater tends to flow radially outward from a mound, until the flow from the mound merges with the natural westerly and southwesterly regional flow field. The net result is that, during the period of active use of the sump and ponds, contaminants migrated from the sump and pond

toward the leased property with a west-northwest or northwest trajectory. After the sump and pond were lined, the seepage was likely reduced substantially, and the local mounds dissipated essentially to the conditions shown for 1991 through 1998, with groundwater flow from the sump mostly to the west and flow from the pond mostly to the southwest.

However, according to the existing water level data, a subdued groundwater mound still remains in the southeast corner of the Brown & Bryant property, possibly as a result of site drainage and local recharge here. There is also a topographic low area just north of the pond where site runoff collects (for example, Lambert, 1998, pp.72-73) that most likely contributes to water table mounding in this area. Canonie (1988a, p.7) also states that "ponding of surface water has historically occurred in the areas between the excavated pond and the UN-32 tank and the area northwest of the pond." A concrete berm placed by EPA contractors at the fenceline surrounding the entire site also serves to retain surface runoff on-site and to enhance local recharge into the southern part of the Brown & Bryant property. Such recharge explains the flexure in the water table contours and the local divergence of the flow field into westerly and southerly directions. At times, the mound is rather prominent. For example, the A-zone water level maps for April 8, 1991, December 9, 1991, and April 21, 1992, clearly show the rise and recession of a groundwater mound beneath the pond (Figure 35). In fact, the highest water level elevation of any monitor well in December 1991 was at AMW-1P, adjacent to the pond (Figure 26).

In my opinion, the known effect of mounding on groundwater flow direction (as shown in Figure 35)

caused by periodic rainfall runoff would have been greatly compounded by the 20 years of sustained infiltration from the sump and pond. The trajectory of contaminants migrating from the sump and pond would have been more to the northwest toward the leased property prior to 1979.

2.1.4.2 The Distribution of COCs in Groundwater Is Consistent With Sources Present on the Brown & Bryant Property

The distribution of COCs in the A-zone is shown on Figures 36 to 49 for April 1992 and May 1997. The April 1992 data reflect the first date when all existing wells were sampled, and the later date represents the most recent data available to us. One exception is the Dinoseb data for November 1996, which are plotted because so many samples from May 1997 were rejected due to laboratory quality assurance/quality control problems (Ecology and Environment, Inc., 1998).

The chemical plumes in groundwater for the fumigants 1,2-DCP, DBCP, 1,2,3-TCP, and 1,3-DCP reveal two areas of relatively high concentration. In general, the northern part of each plume has a peak concentration that lies generally west and downgradient of the sump. In general, the southern part of each plume has a peak that lies southwest and downgradient of the pond. Some of the plume peaks appear to be detached from the sump and pond source locations because these facilities were lined by about 1980, and therefore seepage from these sources was diminished or halted. Subsequently, the center of mass of the contaminants in the A-zone migrated downgradient with the ambient groundwater flow. The apparent detachment of the center of mass may also be attributable to the sparse monitor well network near the sump and pond.

A primary plume of Dinoseb also emanates from the southeast part of the Brown & Bryant property, with a secondary plume from near the sump. Soil data in the vicinity of the sump do not show elevated Dinoseb concentrations (Figure 19) reaching the water table, although it is possible that insufficient soil samples were obtained or that the available borings were not located where Dinoseb reached the groundwater. Beneath the pond, as a result of the fluid head sustained for long periods, Dinoseb has been detected to greater depths than at the Dinoseb spill area. For example, the 70-foot depth sample collected just above the water table in soil boring DD contained 570 µg/kg of Dinoseb. It is not clear how more Dinoseb would have entered the pond than the sump. One explanation may be that most of the Dinoseb in groundwater is derived from the 1983 surface spill that would have flowed downslope south toward the pond where it infiltrated to groundwater; alternatively, the surface soil contamination at the Dinoseb spill area was transported by surface rainfall runoff toward the pond. In any case, based on groundwater and soil concentrations, the Dinoseb in groundwater appears to be derived primarily from the pond area.

It is also noteworthy that for monitor wells where Dinoseb was detected consistently (such as at EPAS-2 and EPAS-3), the concentrations generally have increased significantly from 1991 to about 1995 and subsequently diminished (Table 2a). Also, near the southern part of the leased property, Dinoseb concentrations have increased approximately 1,700-fold at AP-4 and 7-fold at WA-6. This pulse of Dinoseb contrasts with the fumigants, which have generally remained constant or declined in concentration over

this time. I conclude that Dinoseb was released from the sump and pond and reached groundwater along with the other COCs, but that a high-concentration pulse of Dinoseb was introduced later than the other chemicals, such as at the time of the Dinoseb spill, and that Dinoseb continues to impact groundwater because that spill was not fully remediated.

Differences in the plume size for these chemicals shown in Figures 36 through 49 are also attributed partly to differences in their chemical mobility in groundwater. For example, among the COCs that require remediation, the Dinoseb plume is the smallest, not only because of the relatively late spill, but also because Dinoseb is the least water soluble and one of the most highly sorbed by the sediments (Table 3, where the distribution coefficient is a measure of how strongly a compound sorbs to the soil matrix). By contrast, the largest plumes are for chloroform and 1,2-DCP, the COC with one of the highest solubilities in water and the lowest sorption potential. In fact, 1,2-DCP occurs in all monitor wells in both the A-zone and the B-zone (Tables 2a and 2b), including those upgradient and off-site, such as EPAS-4 and WA-8. Concentrations of 1,2-DCP in these off-site wells indicate that the low levels of 1,2-DCP in the northern part of the leased property (Figure 44) probably represent background concentrations created by the chemical applications to surrounding fields (Domagalski and Dubrovski, 1991).

For all dissolved contaminant plumes, as the contaminants migrate due to moving groundwater, the chemicals also disperse in the groundwater. This hydrodynamic dispersion is caused by two factors: mechanical mixing of the chemical in groundwater at

the pore scale and chemical diffusion due to concentration gradients. Thus, plumes characteristically have high concentrations along the center axis, decreasing concentrations away from the source, and lower concentrations near the edges.

These transport principles can be applied to examine the nature of the chemicals in groundwater beneath the leased property. In all cases, the highest concentration occurs in the southern part of the leased property, between monitor wells WA-6 and WA-7 (Figures 4 and 36 through 49). These wells lie approximately along the trajectory of the plume that is emanating from the sump. Much lower concentrations occur to the north beneath the leased property, as a result of hydrodynamic dispersion transverse to the west-northwesterly, westerly or west-southwesterly groundwater flow directions. I would expect such a distribution of these chemicals in the A-zone groundwater beneath the leased property if the source of chemicals originated only on the Brown & Bryant property, primarily at the sump and pond. Potential sources north of the sump may also have impacted groundwater beneath the leased property (Section 2.1.3). Note also that there are no apparent plumes emanating from the leased property.

2.1.5 Flow and Transport Modeling Supports the Conclusion That the Sump and Pond Were the Primary Sources of Contamination to Groundwater

A flow and transport model was applied to the A-zone groundwater to simulate the migration of 1,2-DCP from the sump and the pond. The MODFLOW code (McDonald and Harbaugh, 1984) was used to simulate groundwater flow, and the MT3D code (S.S.

Papadopulus & Associates, Inc., 1996) was used to simulate transport of contaminants. The model includes the historical effect of groundwater mounding. The results of the simulation show that 1,2-DCP migrates from the vicinity of the sump to beneath the leased property (Figure 50). Thus, the numerical flow and transport simulation supports my interpretation of measured data sets, as discussed above in Section 2.1.4.

2.1.6 EPA's Emergency Response Has Not Been Effective and Has in Fact Caused an Increase in Mobilization of Contaminants to Groundwater

In April of 1991, EPA removed approximately 80 cubic yards of Dinoseb-contaminated soil from the Dinoseb spill area (Martin, 1998, Exhibit 1143). In order to excavate this soil, EPA would have had to remove the existing asphalt at the surface. The excavation was backfilled with clean fill, but was not resurfaced with asphalt. This action, in conjunction with berms that were installed onsite, has created conditions that allow additional infiltration of surface water through contaminated soils. It would have been more prudent for EPA to cap or pave the excavated area after work was complete in order to limit surface infiltration. Instead, the excavation area creates a conduit for surface water flow to enter the subsurface, pass through highly contaminated soils, and enter the A-zone groundwater. Therefore the emergency removal action completed by EPA has actually put the groundwater beneath the site at greater risk by allowing additional infiltration of surface water.

2.1.7 EPA Failed to Consider Natural Attenuation in Its Selection of the Remedial Action

In its selection of the remedy and evaluation of risk posed by the site, EPA has failed to consider natural attenuation processes, the observed limited migration of contaminant plumes, and the large distance downgradient to the nearest Arvin municipal well. A variety of natural attenuation processes are likely occurring that will limit plume migration. The observed data over 7 years of monitoring by EPA clearly show that substantial, sequential migration of the contaminant plumes has not occurred. In addition, the distance to the nearest Arvin municipal well is over 900 feet downgradient from the leading edge of the present plume of contaminants. These factors taken together are important in assessing the actual risk of contaminated groundwater reaching a downgradient receptor.

There is strong evidence that most of the contaminant plumes have been attenuating naturally. As shown by comparing the contaminant plumes in Figures 36 through 49, the area enclosed by an equal concentration line has generally decreased from 1992 to 1997, although in some cases chemical analyses are insufficient to define the downgradient extent of the plume. The Dinoseb plume mass has decreased most markedly in the last few years (Figures 40 and 48).

Mass calculations show that from 1992 to 1997 the dissolved mass in groundwater of Dinoseb has declined by 85%, EDB decreased by 76%, DBCP decreased by 70%, 1,3-DCP decreased by 47%, chloroform decreased by 29%, and 1,2,3-TCP decreased by 27%. Mass reduction of Dinoseb, EDB, DBCP, 1,3-DCP, chloroform, and 1,2,3-TCP is likely occurring due to

naturally occurring degradation mechanisms in the subsurface (e.g., Castro and Belser, 1968; Howard et al., 1991).

The half-life of a chemical represents its rate of natural decay in groundwater (Table 3). The biodegradation process thus acts to consume these contaminant plumes naturally. When the rate of dissolved chemical mass input to the plume equals the rate of mass consumption, the plume appears to stabilize. After the contaminant source is removed, the natural attenuation processes may effectively remediate the dissolved-phase contamination. Thus, eliminating discharge to the sump and pond substantially reduced the primary source of the COCs to allow natural attenuation to occur and the A-zone plumes to diminish.

1,2-DCP apparently is an exception to the tendency for the observed COC plumes to attenuate naturally. Based on literature data in Table 3, I expect 1,2-DCP would degrade over time, but at a rate slower than the other constituents. And, in fact, on the leased property, data at WA-3, WA-6, and WA-7 show substantial reductions in 1,2-DCP from 1992 to 1997; but in some other areas, concentrations increased (Figures 37 and 44). The net effect is that, contrary to expectations, the calculated mass of 1,2-DCP increased 27%. The modest increase is attributable to one or more factors, including the following: (1) scarcity of field sampling locations for accurate plume contouring, (2) continuing drainage or leaching of 1,2-DCP from soil to groundwater near uncharacterized sources, such as at the D-D tank, (3) continuing leaching by infiltration of this relatively mobile chemical (high solubility, low sorption) from soil at known source areas, and (4) the presence of 1,2-DCP as a DNAPL in soil or

groundwater, which serves as a continuing source of dissolved-phase 1,2-DCP in groundwater, even after the pond and sump were lined and discharge to them ceased. For some of these same reasons, the degradation rate of chloroform, and to some extent the other COCs as well, is much slower than expected from literature reports.

At the time the ROD was prepared in 1993, EPA did not have the benefit of the plume behavior described in my report. Nevertheless, EPA did have access to scientific literature that clearly demonstrates that these chemicals are likely to degrade. Over the past few years, based on extensive evaluations of contaminant plumes, EPA has developed a guidance document describing how to determine whether natural attenuation is occurring or will likely occur at a specific site (U.S. EPA, 1997). Inasmuch as this guidance document was published after the ROD was issued, EPA did not have the benefit of this experience, so understandably there was no attempt during EPA's site investigation to collect the requisite field data to consider this remedial option in the feasibility study. In my opinion, if the ROD were issued today, the preferred remedy would likely comprise local source removal or containment (e.g., soil and groundwater near sump, pond, and other source areas) coupled with natural attenuation of the remaining dissolved-phase contamination in the A-zone. Therefore, the cost of remediation would be significantly lower.

2.2 Sampling Data Relied Upon by EPA Do Not Show That Releases of Hazardous Substances on the Surface of the Leased Property Have Communicated with Groundwater Beneath the Leased Property

The basis for this opinion includes my evaluation of the available soil and groundwater data, as well as deposition testimony.

EPA relies primarily upon soil data from borings BB, CC, O, and CA20, and groundwater data from a grab sample taken in boring CA20 on the leased property to conclude that leased property soils are contaminated and that the contamination on the leased property has migrated down to groundwater (Lucey, 1996). The reported presence of Dinoseb in the vicinity of the leased property is an important element in EPA's analysis, but EPA apparently failed to consider all information with respect to the likelihood that Dinoseb in soil on the leased property impacted groundwater. The Dinoseb at shallow depths on the leased property is likely attributed to either windblown transport, spills from the warehouse, surface runoff from drum storage areas north of the warehouse, and vehicle traffic (Figure 22), as discussed in Section 2.1.3. EPA failed to consider these sources in their analysis and that such potential sources are not likely to reach groundwater. Apparently, EPA also did not recognize that after December of 1975 the leased property soil infiltration capacity was lowered by vehicle traffic, surface oiling, and asphalt. Furthermore, of all the COCs, Dinoseb is one of the most easily sorbed to soil and is the most readily biodegradable under favorable conditions (Howard et al., 1991).

For Dinoseb to reach groundwater, I expect in general that Dinoseb must be released in high concentrations for long periods of time. Such conditions did not exist at the leased property. However, all these conditions existed on the Brown & Bryant property where Dinoseb beneath the spill areas and pond is found continuously from the surface to near the water table (Figure 19). By contrast, on the leased property, only low concentrations of Dinoseb (2,000 times lower than the surface soil remediation goal of 80,000 µg/kg) were found at borings BB and CC at the 50-foot depth, about 20 feet above the present water table (Figure 19). These deep detections of Dinoseb at borings BB and CC could not be replicated in carefully sampled borings (S16A and S19A) placed at the same locations (Kennedy/Jenks Consultants, 1992). Also, no Dinoseb was detected in nearby borings CA-16 and CA-19 (Figure 19). Therefore, Dinoseb on the leased property is likely limited only to the upper few feet of soil, and the deeper detections in borings BB and CC are attributable to cross contamination during drilling or laboratory errors.

I also note that Dinoseb inexplicably is reported in the off-site background boring G in three of four samples within 15 feet of land surface and then at 45 feet bgs where the concentration was 1,100 µg/kg (Appendix C). The off-site Dinoseb concentration is at least ten times greater than on the leased property, except for the 5-foot sample in boring BB. In the absence of a Dinoseb release reported in the vicinity of the background sample location, and given the high sorption and biodegradation potential of Dinoseb, I believe the data at boring G reveal either poor sampling procedure (i.e., cross contamination) or laboratory analytical errors.

The Dinoseb soil data on the leased property follow a similar pattern of irregular detection with depth and may also be unrepresentative.

Problems with Dinoseb cross contamination were specifically discussed in the minutes from a January 4, 1990 meeting between EPA and Ecology and Environment, Inc. (Woody, 1998, Exhibit 4). The memo states that "During the removal investigation, the auger would hit a pocket of dinoseb and dinoseb would 'puff up' and spread over everything. Quality Control was difficult. Samples with trace amount [sic] of contamination (especially the deeper ones) may have been contaminated at the surface." Regarding Dinoseb results from the "Northwest Corner" (the leased property), "The pervasive and erratic dinoseb findings are hard to explain. Woody said dinoseb was found all over the site, i.e., greenish powder was found on the concrete pad before work began. There was [sic] quality control problems because dinoseb would readily disperse into the air then stick on equipment or whatever." During his deposition, Woody (1998, p.62) stated that "Dinoseb is a very fine powder, it is like talcum powder, and when it is dry and you drill into it, just like talcum powder, a big puffy emission, and it would go everywhere. We tried to control it as best we could...You would see that stuff in the action of the screws, of a Phillip screw, I mean it just got everywhere..."

Several other COCs have been detected in other background borings as well. For example, soil from CA09, east of the Brown & Bryant property (Figure 21), contained 1,2-DCP at 90 µg/kg at a depth of 48 feet bgs and 50 µg/kg at a depth of 65 feet bgs. Soil from boring CB05, approximately 450 feet southwest of the

Brown & Bryant property, contained 50 µg/kg of 1,2-DCP at a depth of 84 feet bgs and 60 µg/kg at 98 feet bgs. These detections seem to indicate either that background concentrations of COCs are high, that cross contamination was occurring during sampling, or that problems were occurring with the laboratory analytical methodology, or some combination thereof.

Mr. Lucey of EPA claims that groundwater containing Dinoseb bailed from boring CA-20 (129 micrograms per liter [µg/L]) is derived from releases that migrated through soil at borings BB and CC, in spite of the absence of Dinoseb in confirmatory soil borings S-16A and S-19A and adjacent borings CA-16 and CA-19. In addition, a groundwater grab sample collected at CA-16, close to BB, did not detect Dinoseb. A groundwater grab sample collected at CA-19, close to CC, detected Dinoseb at only 1.9 µg/L; the federal maximum contaminant level (MCL) for Dinoseb is 7 µg/L. Moreover, EPA uncharacteristically relied upon grab samples of groundwater collected by bailing water from a temporary driven well point, such as CA-20, rather than properly constructed, developed, and sampled monitor wells. This practice is contrary to EPA guidance, which consistently emphasizes the use of standard sampling techniques to collect representative groundwater samples from properly constructed monitor wells (U.S. EPA, 1987a, pp.4-18; U.S. EPA, 1992, pp.7-12; U.S. EPA, 1995). To this point, monitor well WA-3, located about 20 feet from CA-20, did not detect Dinoseb above the MCL of 7 µg/L in eight sampling events from April 1992 to May 1997, although one sample contained 2 µg/L in December 1992. The Dinoseb in the A-zone grab sample at CA-20, if it is representative, is more likely

derived from a source on the Brown & Bryant property that migrated through groundwater to the leased property for these reasons: (1) the overlying soil samples in CA-20 do not contain Dinoseb, (2) there is no Dinoseb in adjacent borings Q and O, (3) CA-20 was historically downgradient of the Brown & Bryant sources, and (4) much greater Dinoseb concentrations occur upgradient on the Brown & Bryant property at WA-6 and AMW-2P (Figure 40).

The pattern of 1,2-DCP in soil at CA-20 supports my opinion that chemicals in soil there did not reach groundwater (Figure 15). 1,2-DCP was detected in five soil samples within 45 feet of land surface at boring CA-20. Six samples were collected in the underlying 20-foot interval of the vadose-zone soil, and 1,2-DCP was not detected in any of these samples. Additionally, a core sample of the A-zone collected about 2 feet below the water table also failed to show 1,2-DCP. However, the core from about 5 feet below the water table did show this chemical at 350 µg/kg (Appendix C). Groundwater in the A-zone generally flows horizontally to the west here, but it also has a downward flow component. I interpret the soil data at CA-20 to indicate that 1,2-DCP in groundwater on the leased property originated upgradient on the Brown & Bryant property near the sump where the underlying soils and groundwater contain 1,2-DCP at high concentrations or beneath the unsampled D-D tank area, rather than originating from the minor surface releases on the leased property. Moreover, there is no 1,2-DCP in borings BB and CC or nearby; thus, the 1,2-DCP in CA-20 groundwater, as well as the Dinoseb, could not come from the vicinity of borings BB and CC, as alleged by EPA.

The 1,2,3-TCP detected in boring O is not a reliable indicator of releases on the leased property that impacted groundwater. Boring O contained 1,2,3-TCP from about 20 to 55 feet bgs, the total depth. Except for DBCP, 1,2,3-TCP was the only fumigant detected in this boring. Within this depth interval, 1,2,3-TCP reached a peak soil concentration of 50 µg/kg at 35 feet, and the concentration diminished to 7.5 µg/kg at the base of the boring. It is possible that in deeper soil samples the 1,2,3-TCP concentration would have decreased even further, showing that 1,2,3-TCP did not reach the groundwater. Such is the case for DBCP, which is at a maximum of 22 µg/kg at 35 feet bgs and decreases to nondetectable at 55 feet bgs. 1,2,3-TCP is a known byproduct of the manufacturing of 1,2-DCP and usually occurs along with the fumigants 1,2-DCP and 1,3-DCP (NIH, 1998); however, this location is an exception. I know of no separate source for or releases of only 1,2,3-TCP. There is no evidence of a local source of 1,2,3-TCP in the deposition testimony nor is there a hot spot of 1,2,3-TCP in the groundwater here (Figures 36 and 43, Table 2a). In addition, there was a reported problem with the field laboratory instrument calibration that occurred during the period when the samples from boring O were analyzed (Yerian, 1998, pp.100-104). If the 1,2,3-TCP is actually present in soil at this location, the very low concentrations and the pattern of occurrence in soil indicate this chemical did not impact groundwater to an extent that would require remediation.

1,3-DCP is a fingerprint or tracer of the path of fumigants in groundwater released from Brown & Bryant. I found no evidence of 1,3-DCP anywhere in soil above the water table on the leased property.

Nevertheless, 1,3-DCP occurs in the A-zone groundwater on the leased property (WA-3, November 1995, Table 2a), as well as in soils beneath the Brown & Bryant property. For example in borings I, DD, and CA24 concentrations range from 5.7 to 1180 µg/kg in the interval of soil above the water table, between 50 to 70 feet bgs (Figure 16). The spatial distribution of 1,3-DCP in groundwater is similar to that for the other chemicals in groundwater beneath the leased property, in that concentrations decrease from east to west and from south to north. Inasmuch as historically, and to a lesser extent today, the trajectory of contaminants migrating from the sump area passes across the southern part of the leased property, the 1,3-DCP is likely derived from the Brown & Bryant sources.

If sources of groundwater contamination beneath the leased property were attributable to migration of contaminants through the overlying vadose zone, I would expect one or more areas of elevated concentration or hot spots in the groundwater plumes beneath or downgradient of the leased property. Such is not the case in any of the plumes I have examined.

The data relied upon by EPA are insufficient to conclude that groundwater was impacted from surface releases on the leased property. John Lucey admitted that "What I was trying to say occurred is that based on the data that we have, the closest soil contamination that we know of in the vadose zone is located at Boring O and detected at CA-20" (Lucey, 1998, p.177). Mr. Lucey also alludes to other sources that may not have been characterized: "Well, there could be areas that weren't sampled nearby that were potential sources, possibly as you hypothesize there, where Boring O is located could have been the source, and it could have

migrated down to the surface and then was picked up at CA-20. I mean, that's one scenario, it could have been infinite possibilities of where that source could be" (Lucey, 1998, p.177). Even though substantial areas upgradient from the leased property were not properly characterized (Figures 12 through 15), Mr. Lucey inexplicably concluded that contamination in groundwater on the leased property resulted from activities on the leased property: "I can only recall my recollection at the time when this was written [Lucey's 1996 memo detailing his rationale for concluding that groundwater beneath the leased property had been impacted by spills on the leased property] and, mainly, I think it was based on the fact that based on the groundwater gradient, that there were no known sources for that contamination in the up-gradient direction, based on the data that we have there" (Lucey, 1998, p.178). When all the data are considered, it is my opinion that groundwater contamination that requires remediation on the leased property is derived from the sources on the Brown & Bryant property.

2.3 The Reported Releases of Hazardous Substances at the Leased Property Did Not Trigger Response Costs, and Will Not Trigger Any Costs in the Future

Based on a review of depositional testimony and available field data, I find no evidence of any large spills, continuous small spills, or significant disposal that might have occurred on the leased property. Deposition testimony presented previously indicates that at most only some minor leakage from fittings on tanks stored on the leased property had occurred (Merryman, 1997, pp.63-64).

2.3.1 Spill Modeling Shows That a Very Large Release on the Leased Property Would Have Been Required to Impact Groundwater

Simulations were performed which indicate that a very large spill of D-D (1,2-DCP) on the leased property would be required in order to impact groundwater beneath the leased property to levels requiring remediation (i.e., ten times the MCL for 1,2-DCP, or 50 µg/L [U.S. EPA, 1993a, p.12]). Although the leased property is paved with asphalt (Figure 51), the asphalt may have been cracked or degraded, and 1,2-DCP is also known to act as a solvent to asphalt. Therefore, I considered two bounding cases for a hypothetical spill that occurred during the warm summer months: (1) a worst-case scenario where the spill occurs on bare dirt, and (2) a best-case scenario where the spill occurs on competent, non-degraded asphalt. The actually field case likely falls between these two cases. For a surface spill, I considered:

- The expected area (radius) of the spill on the ground (based on a brief series of field experiments during which various volumes of water were spilled onto asphalt and soil surfaces similar to those present on the leased property)
- The rate of evaporation of the spill on a warm summer day
- The rate of infiltration to soil or asphalt of the remaining portion of the spill after considering mass lost to evaporation

To quantify these processes, an evaporation-infiltration model was linked to the vadose-zone flow and transport code T2VOC (Falta et al., 1992). The model presented by EPA (1987b) was used to simulate evaporative

losses from a surface spill considering average summer temperature and wind speed at the site. The model of Reible et al. (1990) was then used to estimate infiltration of the spill. The rate of evaporation to the atmosphere was compared with the rate of infiltration into the soil in order to estimate the mass that would be expected to infiltrate into the soil. The mass that was expected to infiltrate was then input into the vadose-zone flow and transport code T2VOC and allowed to redistribute into the subsurface. The contaminant mass flux rate from the lower portion of the vadose zone just above the water table was then used as input to a mixing-cell calculation in order to estimate groundwater concentrations in the saturated zone.

T2VOC uses the integral finite-difference method to solve for flow and transport within a multiphase system with three components: air, water, and a volatile, water-soluble organic chemical. The code considers transfer of contaminant mass between nonaqueous-phase liquid (NAPL), dissolved, vapor, and sorbed phases.

For the vadose-zone flow and transport simulations, a number of mechanisms of contaminant movement into and through the vadose zone were considered:

- Introduction of contamination into the vadose zone in both dissolved and pure (NAPL) phases
- Movement of NAPL laterally through the vadose zone
- Movement of dissolved-phase contamination through soil moisture in the vadose zone
- Dissolution of NAPL into soil moisture
- Sorption of contaminants to soil particles

- Movement of volatile contaminants through the air-filled soil pores in the vapor phase

The stratigraphy of the vadose zone has been conceptualized by dividing it into three layers of different soil types. The properties of the different soils are average values based on measured laboratory values reported in DBS&A (1992).

For the worst-case scenario where a spill of pure 1,2-DCP occurs on bare soil, results of the simulations indicate that about 500 gallons (one-tenth of a tanker truck) would have to have been spilled on the ground surface in order to cause groundwater concentrations of 1,2-DCP in the saturated zone in excess of the ROD-stipulated cleanup levels. For the scenario where the asphalt is new and not degraded, simulation results indicate that a spill of more than 1,000 gallons (one-fifth of a tanker truck) of 1,2-DCP would have had to occur in order to impact groundwater concentrations to levels that exceeded 50 µg/L. No reported releases anywhere near the magnitude of these releases have occurred on the leased property. And, there is no localized plume of elevated 1,2-DCP in groundwater beneath the leased property (see Section 2.1.4.2).

These calculations are conservative in that I have assumed a spill of pure 1,2-DCP. In actuality, however, D-D contains a variety of other chlorinated hydrocarbons in addition to 1,2-DCP. The assumption of a pure 1,2-DCP spill would then overestimate the mass of 1,2-DCP introduced into the subsurface. Thus, the simulation results indicate that the likelihood that a surface spill on the leased property impacted groundwater to actionable levels is negligible.

I am continuing to perform additional simulations to study the effects of surface spills of other COCs.

2.3.2 Existing Chemicals in Soil Will Not Impact Groundwater in the Future

On the leased property, the present concentrations of 1,2-DCP in soil are so low that if this soil contamination leached to the A-zone in the future, the concentrations would be far below regulatory standards. Thus, in the absence of contamination emanating from the Brown & Bryant property, no remedial action would be necessary. I performed a simple calculation to illustrate this point. The calculation proceeded as follows:

1. The highest 1,2-DCP concentration in soil above the water table on the leased property was selected (80 µg/kg at a depth of 10 feet bgs in boring CA20).
2. The pore-water concentration that would be in equilibrium with that soil concentration was calculated.
3. Given the recharge rate at the site (about 1 percent of annual precipitation), a mass flux of 1,2-DCP through the vadose zone and into the water table was calculated as the pore-water concentration multiplied by the recharge rate.
4. The calculated vadose-zone mass flux rate was then input into a simple mixing model that considered the effect of dilution of incoming vadose-zone pore water by groundwater flow in the A-zone aquifer, which did not contain 1,2-DCP initially.

The results of this calculation indicated that the concentration in the groundwater below a column of soil contaminated with 80 µg/kg of 1,2-DCP would be approximately 100 times lower than the MCL for 1,2-

DCP in groundwater. Thus, I conclude that the existing concentrations of 1,2-DCP in soil on the leased property are too low to cause any future impact to groundwater that would require remediation.

Table 1. Constituents of Selected Products Handled at the Brown & Bryant Facility

Trade Name	Manufacturer	COCs	Notes[c]
D-D	Shell	1,2-DCP; 1,3-DCP[a], 1,2,3-TCP[b]	Banned in 1984
Dowfume (various types)	Dow	EDB	Banned in 1983
Dinitro weed killer	Dow	Dinoseb	Banned in California in 1986
Fumazone	Dow	DBCP	Banned in 1979
Nemagon (various types)	Shell	DBCP	Banned in 1979
Premerge	Dow	Dinoseb	Banned in California in 1986
Selective weed killer	Dow	Dinoseb	Banned in California in 1986
Vidden D	Dow	1,2-DCP, 1,3-DCP[a], 1,2,3-TCP[b]	Banned in 1984

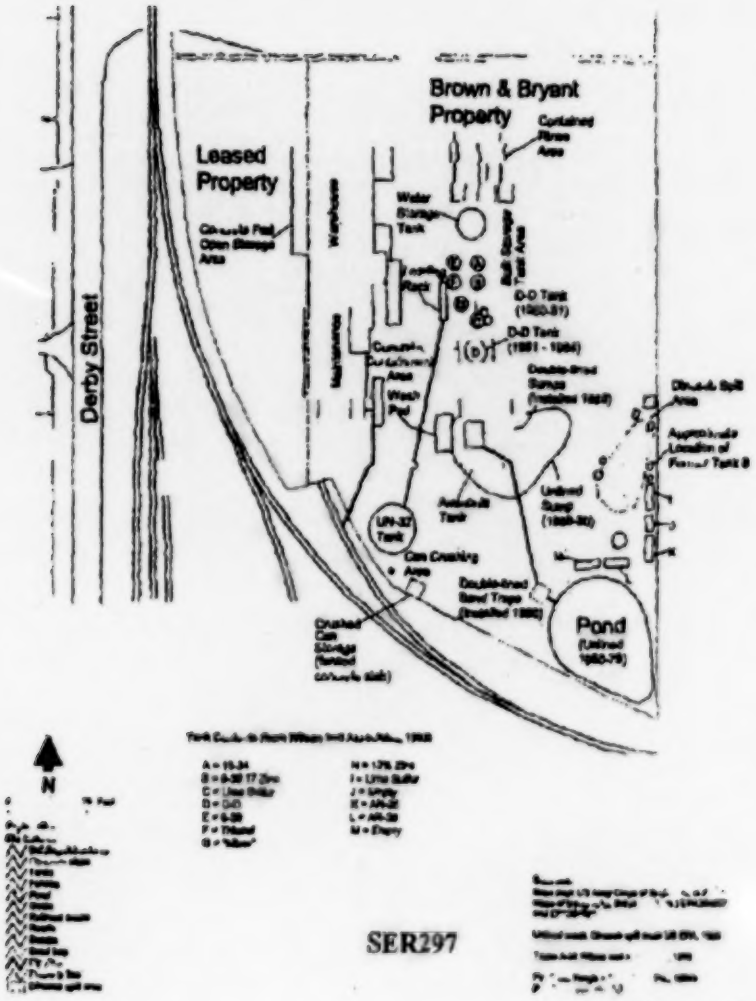
a Not specifically listed in ingredients, but is a known isomer of 1,2-DCP, and is found widely in site soils and groundwater.

b Not specifically listed in ingredients, but is a known manufacturing byproduct of 1,2-DCP, and is found widely in site soils and groundwater.

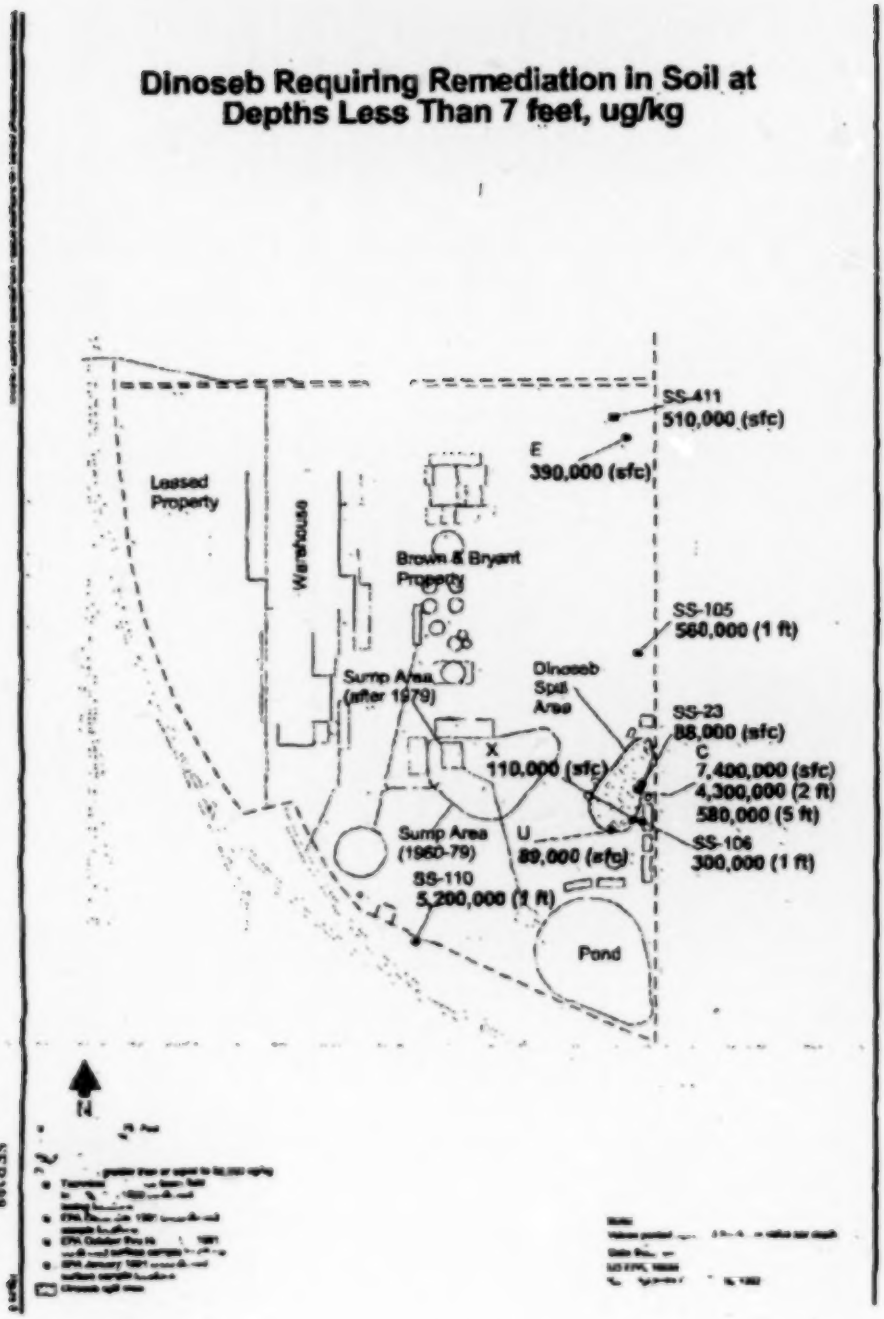
c Banning dates from Domagalski and Dubrovski (1991).

1,2-DCP = 1,2-dichloropropane
1,3-DCP = 1,3-dichloropropane
1,2,3-TCP = 1,2,3-trichloropropane
EDB = Ethylene dibromide
DBCP = Dibromochloropropane
Dinoseb = 2-sec-butyl-4,6-dinitrophenol

[Site Map]


Brown & Bryant Property
Leased Property
Derby Street
Pond
N
SER297

[Map – Dinoseb Soil Remediation]



[Trial Exhibit 63]

SUMMARY OF SHELL D-D® INVOICES

Of the 213 invoices for D-D® in evidence:

- 157 have no allowance
- 56 have some sort of allowance; of those:
  - Only 10 have an "evaporation allowance"
  - 19 have a "fall fumigation allowance"
  - 9 have a "promotional allowance"
  - 9 have a "promotional allowance and temp compet all"
- 5 have a "temp compet all"
- 4 have a "comp allowance"

Trial Ex. #	Description	Type of Allowance
1152	Shell Invoice Grouped With Photocopy of Purchase Order No. 3077, eight pages	NONE
1154	Shell Invoice Grouped With Photocopy of Purchase Order No. 3093, six pages	NONE
1155	Shell Invoice Grouped With Photocopy of Purchase Order No. 3108, six pages	NONE
1156	Shell Invoice Grouped With Photocopy of Purchase Order No. 3147, six pages	NONE
1157	Shell Invoice Grouped With Photocopy of Purchase Order No. 3188, five pages	NONE
1158	Shell Invoice Grouped With Photocopy of Purchase Order No. 3231, five pages	NONE
1159	Shell Invoice Grouped With Photocopy of Purchase Order No. 3232, seven pages	NONE
1160	Shell Invoice Grouped With Photocopy of Purchase Order No. 3514, eight pages	NONE

Trial Ex. #	Description	Type of Allowance
1161	Shell Invoice Grouped With Photocopy of Purchase Order No. 3531, six pages	NONE
1162	Shell Invoice Grouped With Photocopy of Purchase Order No. 3532, six pages	NONE
1163	Shell Invoice Grouped With Photocopy of Purchase Order No. 3533, seven pages	NONE
1164	Shell Invoice Grouped With Photocopy of Purchase Order No. 3556, seven pages	NONE
1165	Shell Invoice Grouped With Photocopy of Purchase Order No. 3238, six pages	NONE
1166	Shell Invoice Grouped With Photocopy of Purchase Order No. 3241, six pages	NONE
1167	Shell Invoice Grouped With Photocopy of Purchase Order No. 3592, six pages	NONE
1168	Shell Invoice Grouped With Photocopy of Purchase Order No. 3596, six pages	NONE

Trial Ex. #	Description	Type of Allowance
1169	Shell Invoice Grouped With Photocopy of Purchase Order No. 3242, six pages	NONE
1170	Shell Invoice Grouped With Photocopy of Purchase Order No. 3626, six pages	NONE
1171	Shell Invoice Grouped With Photocopy of Purchase Order No. 3663, seven pages	NONE
1172	Shell Invoice Grouped With Photocopy of Purchase Order No. 3666	NONE
1173	Shell Invoice Grouped With Photocopy of Purchase Order No. 3679, six pages	NONE
1174	Shell Invoice Grouped With Photocopy of Purchase Order No. 3753, six pages	NONE
1175	Photocopy of Purchase Order No. 2725, one page	NONE
1176	Photocopy of Purchase Order No. 2726, one page	NONE
1177	Shell Invoice Grouped With Photocopy of Purchase Order No. 2748, six pages	NONE

Trial Ex. #	Description	Type of Allowance
1178	Shell Invoice Grouped With Photocopy of Purchase Order No. 2778, six pages	NONE
1179	Shell Invoice Grouped With Photocopy of Purchase Order No. 2779, six pages	NONE
1180	Shell Invoice Grouped With Photocopy of Purchase Order No. 2798, five pages	NONE
1181	Shell Invoice Grouped With Photocopy of Purchase Order No. 2799, six pages	NONE
1182	Shell Invoice Grouped With Photocopy of Purchase Order No. 2800, six pages	NONE
1183	Shell Invoice Grouped With Photocopy of Purchase Order No. 2801, six pages	NONE
1184	Shell Invoice Grouped With Photocopy of Purchase Order No. 2811, six pages	NONE
1185	Shell Invoice Grouped With Photocopy of Purchase Order No. 2812, seven pages	NONE

Trial Ex. #	Description	Type of Allowance
1186	Shell Invoice Grouped With Photocopy of Purchase Order No. 2898, six pages	NONE
1187	Shell Invoice Grouped With Photocopy of Purchase Order No. 2899, seven pages	NONE
1188	Shell Invoice Grouped With Photocopy of Purchase Order No. 2900, six pages	NONE
1189	Shell Invoice Grouped With Photocopy of Purchase Order No. 2912, nine pages	NONE
1190	Shell Invoice Grouped With Photocopy of Purchase Order No. 3006, seven pages	NONE
1191	Shell Invoice Grouped With Photocopy of Purchase Order No. 3088, six pages	NONE
1192	Shell Invoice Grouped With Photocopy of Purchase Order No. 3133, seven pages	NONE
1239	Shell Invoice Grouped With Photocopy of Purchase Order No. 7190, three pages	NONE

Trial Ex. #	Description	Type of Allowance
1193	Shell Invoice Grouped With Photocopy of Purchase Order No. 3752, six pages	NONE
1194	Shell Invoice Grouped With Photocopy of Purchase Order No. 3753, six pages	NONE
1195	Shell Invoice Grouped With Photocopy of Purchase Order No. 3979, six pages	NONE
1196	Shell Invoice Grouped With Photocopy of Purchase Order No. 4108, seven pages	NONE
1197	Shell Invoice Grouped With Photocopy of Purchase Order No. 4186, seven pages	NONE
1198	Shell Invoice Grouped With Photocopy of Purchase Order No. 4187, six pages	NONE
1199	Shell Invoice Grouped With Photocopy of Purchase Order No. 4197, seven pages	NONE
1200	Shell Invoice Grouped With Photocopy of Purchase Order No. 4216, three pages	NONE

Trial Ex. #	Description	Type of Allowance
1201	Shell Invoice Grouped With Photocopy of Purchase Order No. 4231, seven pages	NONE
1202	Shell Invoice Grouped With Photocopy of Purchase Order No. 4287, seven pages	NONE
1203	Photocopy of Purchase Order No. 4304, one page	NONE
1205	Shell Invoice Grouped With Photocopy of Purchase Order No. 4408, six pages	NONE
1204	Shell Invoice Grouped With Photocopy of Purchase Order No. 4398, seven pages	NONE
1206	Shell Invoice Grouped With Photocopy of Purchase Order No. 4570, four pages	NONE
1207	Shell Invoice Grouped With Photocopy of Purchase Order No. 5109, five pages	NONE
1208	Shell Invoice Grouped With Photocopy of Purchase Order No. 5140, seven pages	NONE

Trial Ex. #	Description	Type of Allowance
1209	Shell Invoice Grouped With Photocopy of Purchase Order No. 5161, six pages	NONE
1210	Shell Invoice Grouped With Photocopy of Purchase Order No. 5222, six pages	NONE
1211	Shell Invoice Grouped With Photocopy of Purchase Order No. 5223, six pages	NONE
1212	Shell Invoice Grouped With Photocopy of Purchase Order No. 5224, six pages	NONE
1216	Shell Invoice Grouped With Photocopy of Purchase Order No. 6452, six pages	LESS EVAPORATION ALLOWANCE
1217	Shell Invoice Grouped With Photocopy of Purchase Order No. 6453, six pages	LESS EVAPORATION ALLOWANCE
1213	Shell Invoice Grouped With Photocopy of Purchase Order No. 6427, six pages	NONE
1214	Shell Invoice Grouped With Photocopy of Purchase Order No. 6437, five pages	NONE

Trial Ex. #	Description	Type of Allowance
1215	Shell Invoice Grouped With Photocopy of Purchase Order No. 6438, six pages	NONE
1218	Shell Invoice Grouped With Photocopy of Purchase Order No. 6505, six pages	LESS EVAPORATION ALLOWANCE
1219	Shell Invoice Grouped With Photocopy of Purchase Order No. 6506, six pages	LESS EVAPORATION ALLOWANCE
1220	Shell Invoice Grouped With Photocopy of Purchase Order No. 6507, seven pages	LESS EVAPORATION ALLOWANCE
1221	Shell Invoice Grouped With Photocopy of Purchase Order No. 6508, six pages	LESS EVAPORATION ALLOWANCE
1222	Shell Invoice Grouped With Photocopy of Purchase Order No. 6509, seven pages	LESS EVAPORATION ALLOWANCE
1223	Shell Invoice Grouped With Photocopy of Purchase Order No. 6510, six pages	LESS EVAPORATION ALLOWANCE
1224	Shell Invoice Grouped With Photocopy of Purchase Order No. 6511, six pages	LESS EVAPORATION ALLOWANCE

Trial Ex. #	Description	Type of Allowance
1225	Shell Invoice Grouped With Photocopy of Purchase Order No. 6512, six pages	LESS EVAPORATION ALLOWANCE
1227	Shell Invoice Grouped With Photocopy of Purchase Order No. 6759, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1230	Shell Invoice Grouped With Photocopy of Purchase Order No. 6762, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1231	Shell Invoice Grouped With Photocopy of Purchase Order No. 6763, four pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1228	Shell Invoice Grouped With Photocopy of Purchase Order No. 6760, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1229	Shell Invoice Grouped With Photocopy of Purchase Order No. 6761, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1232	Shell Invoice Grouped With Photocopy of Purchase Order No. 6764, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1233	Shell Invoice Grouped With Photocopy of Purchase Order No. 6765, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE

Trial Ex. #	Description	Type of Allowance
1234	Shell Invoice Grouped With Photocopy of Purchase Order No. 6766, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1235	Shell Invoice Grouped With Photocopy of Purchase Order No. 7081, two pages	NONE
1236	Shell Invoice Grouped With Photocopy of Purchase Order No. 7082, five pages	NONE
1237	Shell Invoice Grouped With Photocopy of Purchase Order No. 7083, five pages	NONE
1240	Shell Invoice Grouped With Photocopy of Purchase Order No. 7191, six pages	NONE
1241	Shell Invoice Grouped With Photocopy of Purchase Order No. 7192, seven pages	NONE
1238	Photocopy of Purchase Order No. 7287, one page	NONE
1242	Shell Invoice Grouped With Photocopy of Purchase Order No. 7287, six pages	NONE

Trial Ex. #	Description	Type of Allowance
1243	Shell Invoice Grouped With Photocopy of Purchase Order No. 7291, six pages	NONE
1244	Shell Invoice Grouped With Photocopy of Purchase Order No. 2105, five pages	NONE
1245	Shell Invoice Grouped With Photocopy of Purchase Order No. 2106, five pages	NONE
1247	Shell Invoice Grouped With Photocopy of Purchase Order No. 2131, six pages	NONE
1246	Shell Invoice Grouped With Photocopy of Purchase Order No. 2130, seven pages	NONE
1248	Shell Invoice Grouped With Photocopy of Purchase Order No. 2148, six pages	NONE
1249	Shell Invoice Grouped With Photocopy of Purchase Order No. 2183, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1250	Shell Invoice Grouped With Photocopy of Purchase Order No. 2184, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE

Trial Ex. #	Description	Type of Allowance
1251	Shell Invoice Grouped With Photocopy of Purchase Order No. 2185, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1252	Shell Invoice Grouped With Photocopy of Purchase Order No. 2254, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1253	Shell Invoice Grouped With Photocopy of Purchase Order No. 2255, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1254	Shell Invoice Grouped With Photocopy of Purchase Order No. 2259, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1255	Shell Invoice Grouped With Photocopy of Purchase Order No. 2286, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1257	Shell Invoice Grouped With Photocopy of Purchase Order No. 2288, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1256	Shell Invoice Grouped With Photocopy of Purchase Order No. 2287, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1258	Shell Invoice Grouped With Photocopy of Purchase Order No. 2299, six pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE

Trial Ex. #	Description	Type of Allowance
1259	Shell Invoice Grouped With Photocopy of Purchase Order No. 2300, five pages	LESS FALL FUMIGATION PROMOTIONAL ALLOWANCE
1260	Shell Invoice Grouped With Photocopy of Purchase Order No. 2330, six pages	LESS PROMOTIONAL ALLOWANCE
1261	Shell Invoice Grouped With Photocopy of Purchase Order No. 2331, six pages	LESS PROMOTIONAL ALLOWANCE
1262	Shell Invoice Grouped With Photocopy of Purchase Order No. 2332, six pages	LESS PROMOTIONAL ALLOWANCE
1263	Shell Invoice Grouped With Photocopy of Purchase Order No. 2338, six pages	LESS PROMOTIONAL ALLOWANCE
1264	Shell Invoice Grouped With Photocopy of Purchase Order No. 2348, seven pages	LESS PROMOTIONAL ALLOWANCE
1265	Shell Invoice Grouped With Photocopy of Purchase Order No. 2347, six pages	LESS PROMOTIONAL ALLOWANCE
1266	Shell Invoice Grouped With Photocopy of Purchase Order No. 2375, six pages	LESS PROMOTIONAL ALLOWANCE

Trial Ex. #	Description	Type of Allowance
1267	Shell Invoice Grouped With Photocopy of Purchase Order No. 2376, six pages	LESS PROMOTIONAL ALLOWANCE
1268	Shell Invoice Grouped With Photocopy of Purchase Order No. 2409, seven pages	LESS PROMOTIONAL ALLOWANCE
1271	Shell Invoice Grouped With Photocopy of Purchase Order No. 10153, five pages	LESS COMP ALLOWANCE
1272	Shell Invoice Grouped With Photocopy of Purchase Order No. 10154, six pages	LESS COMP ALLOWANCE
1269	Shell Invoice Grouped With Photocopy of Purchase Order No. 10176, six pages	LESS COMP ALLOWANCE
1270	Shell Invoice Grouped With Photocopy of Purchase Order No. 10178, six pages	LESS COMP ALLOWANCE
1273	Shell Invoice Grouped With Photocopy of Purchase Order No. 9221, seven pages	NONE
1274	Shell Invoice Grouped With Photocopy of Purchase Order No. 10214, eight pages	NONE

Trial Ex. #	Description	Type of Allowance
1275	Shell Invoice Grouped With Photocopy of Purchase Order No. 10280, five pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1276	Shell Invoice Grouped With Photocopy of Purchase Order No. 10335, six pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1277	Shell Invoice Grouped With Photocopy of Purchase Order No. 10353, six pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1278	Shell Invoice Grouped With Photocopy of Purchase Order No. 10360, five pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1279	Shell Invoice Grouped With Photocopy of Purchase Order No. 10373, six ages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1280	Shell Invoice Grouped With Photocopy of Purchase Order No. 10374, six pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL

Trial Ex. #	Description	Type of Allowance
1281	Shell Invoice Grouped With Photocopy of Purchase Order No. 10379, six pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1282	Shell Invoice Grouped With Photocopy of Purchase Order No. 10380, seven pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1283	Shell Invoice Grouped With Photocopy of Purchase Order No. 10386, five pages	LESS PROMOTIONAL ALLOWANCE/ LESS TEMP COMPET ALL
1285	Shell Invoice Grouped With Photocopy of Purchase Order No. 10413, six pages	LESS TEMP COMPET ALL
1284	Shell Invoice Grouped With Photocopy of Purchase Order No. 10412, six pages	LESS TEMP COMPET ALL
1286	Shell Invoice Grouped With Photocopy of Purchase Order No. 10414, six pages	LESS TEMP COMPET ALL
1287	Shell Invoice Grouped With Photocopy of Purchase Order No. 10430, seven pages	LESS TEMP COMPET ALL

Trial Ex. #	Description	Type of Allowance
1288	Shell Invoice Grouped With Photocopy of Purchase Order No. 10431, six pages	LESS TEMP COMPET ALL
1289	Shell Invoice Grouped With Photocopy of Purchase Order No. 10474, five pages	NONE
1296	Shell Invoice Grouped With Photocopy of Purchase Order No. 10475, six pages	NONE
1290	Shell Invoice Grouped With Photocopy of Purchase Order No. 10502, six pages	NONE
1291	Shell Invoice Grouped With Photocopy of Purchase Order No. 10503, six pages	NONE
1293	Shell Invoice Grouped With Photocopy of Purchase Order No. 10542, five pages	NONE
1294	Shell Invoice Grouped With Photocopy of Purchase Order No. 10549, five pages	NONE
1295	Shell Invoice Grouped With Photocopy of Purchase Order No. 10561, five pages	NONE

Trial Ex. #	Description	Type of Allowance
1297	Shell Invoice Grouped With Photocopy of Purchase Order No. 10747, six pages	NONE
1298	Shell Invoice Grouped With Photocopy of Purchase Order No. 10776, five pages	NONE
1299	Shell Invoice Grouped With Photocopy of Purchase Order No. 10799, six pages	NONE
1300	Shell Invoice Grouped With Photocopy of Purchase Order No. 10800, six pages	NONE
1301	Shell Invoice Grouped With Photocopy of Purchase Order No. 10805, four pages	NONE
1302	Shell Invoice Grouped With Photocopy of Purchase Order No. 10806, five pages	NONE
1303	Shell Invoice Grouped With Photocopy of Purchase Order No. 10811, six pages	NONE
1304	Shell Invoice Grouped With Photocopy of Purchase Order No. 10830, seven pages	NONE

Trial Ex. #	Description	Type of Allowance
1305	Shell Invoice Grouped With Photocopy of Purchase Order No. 10912, six pages	NONE
1306	Shell Invoice Grouped With Photocopy of Purchase Order No. 10944, five pages	NONE
1307	Shell Invoice Grouped With Photocopy of Purchase Order No. 10951, five pages	NONE
1308	Shell Invoice Grouped With Photocopy of Purchase Order No. 10962, eleven pages	NONE
1309	Shell Invoice Grouped With Photocopy of Purchase Order No. 10969, twelve pages	NONE
1310	Shell Invoice Grouped With Photocopy of Purchase Order No. 10970, six pages	NONE
1311	Shell Invoice Grouped With Photocopy of Purchase Order No. 10986, five pages	NONE
1312	Shell Invoice Grouped With Photocopy of Purchase Order No. 10989, five pages	NONE

Trial Ex. #	Description	Type of Allowance
1313	Shell Invoice Grouped With Photocopy of Purchase Order No. 12601, four pages	NONE
1314	Shell Invoice Grouped With Photocopy of Purchase Order No. 12602, five pages	NONE
1315	Shell Invoice Grouped With Photocopy of Purchase Order No. 12651, five pages	NONE
1316	Shell Invoice Grouped With Photocopy of Purchase Order No. 12652, five pages	NONE
1317	Shell Invoice Grouped With Photocopy of Purchase Order No. 12674, five pages	NONE
1318	Shell Invoice Grouped With Photocopy of Purchase Order No. 12678, five pages	NONE
1319	Shell Invoice Grouped With Photocopy of Purchase Order No. 12683, six pages	NONE
1320	Shell Invoice Grouped With Photocopy of Purchase Order No. 12734, three pages	NONE

Trial Ex. #	Description	Type of Allowance
1321	Shell Invoice Grouped With Photocopy of Purchase Order No. 12778, five pages	NONE
1322	Shell Invoice Grouped With Photocopy of Purchase Order No. 12804, six pages	NONE
1334	Shell Invoice Grouped With Photocopy of Purchase Order No. 13721, five pages	NONE
1335	Shell Invoice Grouped With Photocopy of Purchase Order No. 13721, seventeen pages	NONE
1324	Shell Invoice Grouped With Photocopy of Purchase Order No. 12931, five pages	NONE
1325	Shell Invoice Grouped With Photocopy of Purchase Order No. 12932, six pages	NONE
1323	Shell Invoice Grouped With Photocopy of Purchase Order No. 12946, six pages	NONE
1327	Shell Invoice Grouped With Photocopy of Purchase Order No. 12947, six pages	NONE

Trial Ex. #	Description	Type of Allowance
1326	Shell Invoice Grouped With Photocopy of Purchase Order No. 13046, six pages	NONE
1330	Shell Invoice Grouped With Photocopy of Purchase Order No. 13073, nine pages	NONE
1331	Shell Invoice Grouped With Photocopy of Purchase Order No. 13097, five pages	NONE
1332	Shell Invoice Grouped With Photocopy of Purchase Order No. 13119, five pages	NONE
1333	Shell Invoice Grouped With Photocopy of Purchase Order No. 13120, five pages	NONE
1336	Shell Invoice Grouped With Photocopy of Purchase Order No. 13128, five pages	NONE
1337	Shell Invoice Grouped With Photocopy of Purchase Order No. 13145, six pages	NONE
1338	Shell Invoice Grouped With Photocopy of Purchase Order No. 13154, five pages	NONE

Trial Ex. #	Description	Type of Allowance
1339	Shell Invoice Grouped With Photocopy of Purchase Order No. 13162, five pages	NONE
1340	Shell Invoice Grouped With Photocopy of Purchase Order No. 13166, five pages	NONE
1341	Shell Invoice Grouped With Photocopy of Purchase Order No. 13279, five pages	NONE
1342	Shell Invoice Grouped With Photocopy of Purchase Order No. 13280, six pages	NONE
1343	Shell Invoice Grouped With Photocopy of Purchase Order No. 15012, six pages	NONE
1344	Shell Invoice Grouped With Photocopy of Purchase Order No. 14926, five pages	NONE
1345	Shell Invoice Grouped With Photocopy of Purchase Order No. 14927, seven pages	NONE
1346	Shell Invoice Grouped With Photocopy of Purchase Order No. 15090, five pages	NONE

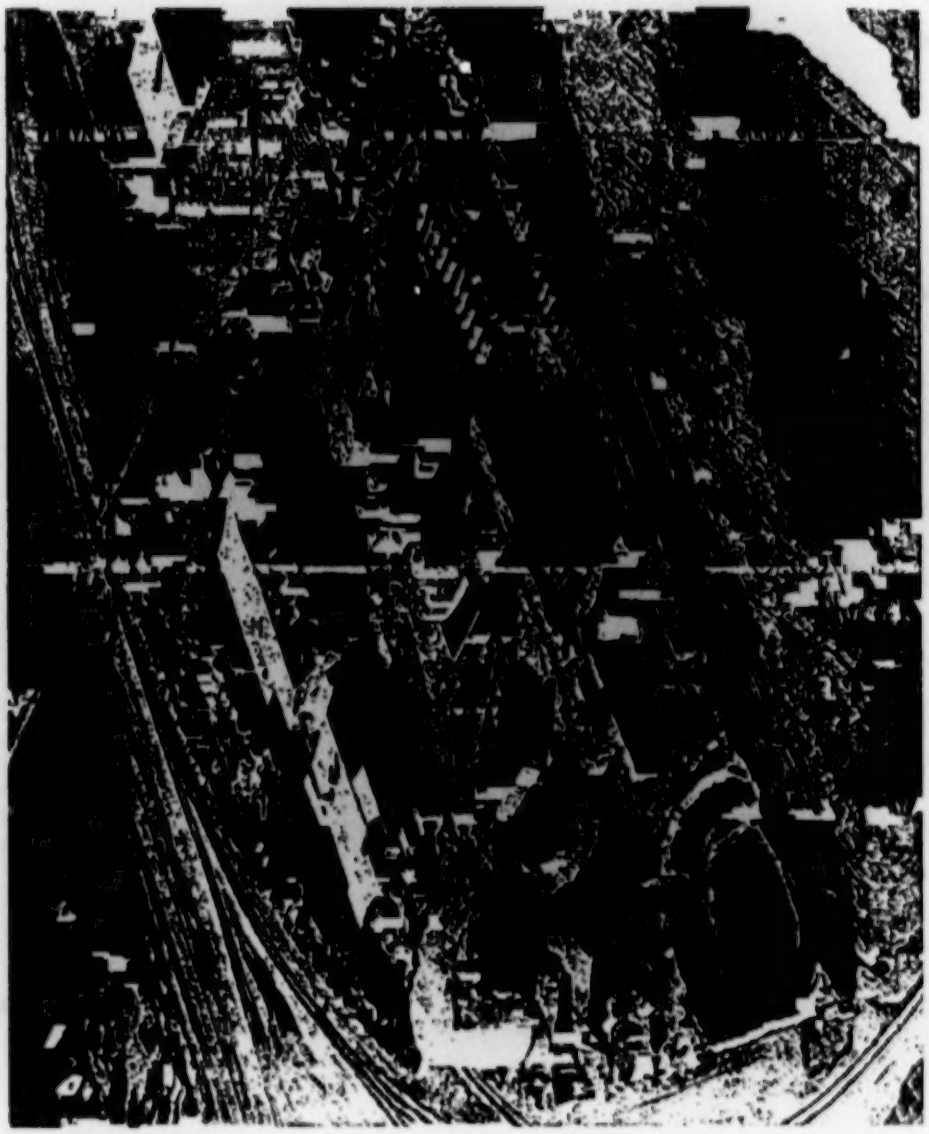
Trial Ex. #	Description	Type of Allowance
1347	Shell Invoice Grouped With Photocopy of Purchase Order No. 15091, six pages	NONE
1348	Shell Invoice Grouped With Photocopy of Purchase Order No. 15106, six pages	NONE
1349	Shell Invoice Grouped With Photocopy of Purchase Order No. 15169, five pages	NONE
1350	Shell Invoice Grouped With Photocopy of Purchase Order No. 15564, five pages	NONE
1351	Shell Invoice Grouped With Photocopy of Purchase Order No. 15578, five pages	NONE
1352	Shell Invoice Grouped With Photocopy of Purchase Order No. 15579, five pages	NONE
1328	Shell Invoice Grouped With Photocopy of Purchase Order No. 15590, five pages	NONE
1329	Shell Invoice Grouped With Photocopy of Purchase Order No. 15591, five pages	NONE

Trial Ex. #	Description	Type of Allowance
1353	Photocopy of Purchase Order No. 15590, one page	NONE
1354	Shell Invoice Grouped With Photocopy of Purchase Order No. 15591, one page	NONE
1355	Shell Invoice Grouped With Photocopy of Purchase Order No. 15592, five pages	NONE
1356	Shell Invoice Grouped With Photocopy of Purchase Order No. 15610, six pages	NONE
1357	Shell Invoice Grouped With Photocopy of Purchase Order No. 15628, five pages	NONE
1358	Shell Invoice Grouped With Photocopy of Purchase Order No. 15629, two pages	NONE
1359	Shell Invoice Grouped With Photocopy of Purchase Order No. 15634, five pages	NONE
1360	Shell Invoice Grouped With Photocopy of Purchase Order No. 15635, six pages	NONE

Trial Ex. #	Description	Type of Allowance
1361	Shell Invoice Grouped With Photocopy of Purchase Order No. 15636, five pages	NONE
1362	Shell Invoice Grouped With Photocopy of Purchase Order No. 15671, six pages	NONE
1363	Shell Invoice Grouped With Photocopy of Purchase Order No. 15672, five pages	NONE
1364	Shell Invoice Grouped With Photocopy of Purchase Order No. 15673, six pages	NONE
1365	Shell Invoice Grouped With Photocopy of Purchase Order No. 15674, six pages	NONE

JA-440

[Trial Exhibit 392 –
Aerial Photo]



[Trial Exhibit 1070]

SHELL CHEMICAL COMPANY

DATE MARCH 20, 1973

TO SAN RAMON – AGRICULURAL DIVISION MANAGER MARKETING SERVICES

FROM MANAGER SERVICES WESTERN MARKETING REGION AGRICULTURAL DIV.–WALNUT CREEK

SUBJECT1973 MARKETING AGREEMENTS

We attach photocopies of 1973 Marketing Agreements for the following:

.Bakersfield Ag Chem
Brown & Bryant, Inc.
Britz Chemical Co.
NH3 Service Co.
Frank Olocco Agric. Pest Control
Valley Farm Supply

/s/ W. B. Cochrane
W. B. Cochrane

Attachments

cc: Fresno - WMR - District Manager) w/o attachment
San Ramon - AD - IS (2))

[Shell logo omitted]

SHELL CHEMICAL COMPANY
A DIVISION OF SHELL OIL COMPANY
AGRICULTURAL DIVISION
MARKETING AGREEMENT – 1973

Gentlemen:

It is our intention to enter into an Agreement with you concerning the resale of the Shell pesticides listed in this Agreement.

Shell's objective in making this Agreement with you is to maximize penetration of Shell's pesticides in the area of your primary marketing responsibility. To accomplish this objective, we believe that a clear understanding of key responsibilities for each party is essential.

I. Area of Primary Marketing Responsibility

Your area of primary marketing responsibility is defined as:

1. (written definition attached) ☐ Kern County
2. (attached map) ☐

II. Responsibilities

1. Brown & Bryant, Inc. responsibilities: (Customer)

Your organization agrees to assume the following responsibilities:

1. Maintain competent sales and technical personnel sufficient to provide adequate service to customers in your area of primary marketing responsibility.
2. Be familiar with pest problems in your marketing area, with Agricultural Extension service recommendations, and instruct your sales force accordingly. You will follow instructions on the label and make no claim as to performance or application techniques which are not clearly expressed thereon. You will keep customers informed of any label changes and/or recommendations.
3. Maintain adequate inventories of Shell Pesticides in order to provide prompt shipments to customers throughout your primary area of responsibility.
4. Bring in your key pesticide personnel for a Shell instructed one-day meeting when mutually beneficial. The purpose of these meetings will be to review with your personnel the technical aspects of Shell Pesticides as well as pertinent marketing information.
5. Cooperate with Shell in the implementation of its sales, advertising and other promotional programs.
6. Make prompt initial investigations and report to Shell all customer product complaints and cooperate with Shell in the appropriate handling of such product complaints.

7. Where a product carries an inventory protection clause, you will complete and return to Shell the information necessary by the date specified. Forms will be sent to you with the monthly statement the month prior to the due date for each product involved (example attached).

III. Shell Responsibilities

In consideration of the above, Shell agrees to:

1. Carry an advertising campaign which will appear in national as well as local media. In addition, we will supply literature for direct mail, sales aids and visual material for your marketing organization.
2. Offer to you as introduced by Shell, various product promotion programs dealing with Shell Pesticides to assist you in gaining maximum returns on Shell Pesticides.
3. Assist you and keep you informed of any technical problems concerning Shell Pesticides that may arise in their sales and application.
4. Supply informative speakers for your sales meetings and dealer/grower meetings whenever possible.

IV. Agreement

Having mutually agreed to all of these responsibilities, Shell will make available to you and you will endeavor to purchase and resell the quantities of pesticides outlined on Exhibit A. The prices and terms shall be those attached and in the order acknowledgment

portion of Shell's shipping order. Exhibit B is your best estimate of a schedule which will assist us in stocking warehouse paints to supply your orders.

If the above is acceptable to you, please indicate the same by signing in the space below. Please return the original and one copy. The other copy is for your files.

Very truly yours,

/s/ [illegible]
District Manager

Attachments

Brown & Bryant, Inc.

by /s/ [illegible]
Accepted

3/14/73
Date

EXHIBIT A
SHELL PRODUCTS MARKETING AGREEMENT
ANTICIPATED PURCHASES

PRODUCT: Aldrin Tech	
Total Previous Year Purchases (rebilled carryover plus purchases)	4.0M lbs
Less Carryover Inventory	
Net 1972 Purchases	4.0M lbs
Estimated 1973 Net Sales	0.3M lbs
Estimated 1973 Purchases from Shell	0.3M lbs.
PRODUCT: AZODRIN(R) 5 Insecticide	
Total Previous Year Purchases (rebilled carryover plus purchases)	1.0M gals
Less Carryover Inventory	
Net 1972 Purchases	–
Estimated 1973 Net Sales	1.0M gals
Estimated 1973 Purchases from Shell	1.0M gals
PRODUCT: D–D (R) Soil Fumigant	
Total Previous Year Purchases (rebilled carryover plus purchases)	106.0M gals
Less Carryover Inventory	
Net 1972 Purchases	106.0M gals
Estimated 1973 Net Sales	110.0M gals
Estimated 1973 Purchases from Shell	110.0M gals

PRODUCT:	NEMAGON (R) 12.1C Soil Fumigant	
Total Previous Year Purchases (rebilled carryover plus purchases)		4.0M gals
Less Carryover Inventory		
Net 1972 Purchases		4.0M gals
Estimated 1973 Net Sales		3.5M gals
Estimated 1973 Purchases from Shell		3.5M gals
PRODUCT:	NEMAGON(R) 12.1 EC Soil Fumigant	
Total Previous Year Purchases (rebilled carryover plus purchases)		0.9M gals
Less Carryover Inventory		
Net 1972 Purchases		0.9M gals
Estimated 1973 Net Sales		2.0M gals
Estimated 1973 Purchases from Shell		2.0M gals
PRODUCT:	PLANAVIN(R) 4 Herbicide	
Total Previous Year Purchases (rebilled carryover plus purchases)		0.1M gals
Less Carryover Inventory		
Net 1972 Purchases		0.1M gals
Estimated 1973 Net Sales		0.2M gals
Estimated 1973 Purchases from Shell		0.2M gals
PRODUCT:	PHOSDRIN(R) 4 Insecticide	
Total Previous Year Purchases (rebilled carryover plus purchases)		-

Less Carryover Inventory
Net 1972 Purchases
Estimated 1973 Net Sales
Estimated 1973 Purchases from Shell

PRODUCT: PLANAVIN® W.P. Herbicide
Total Previous Year Purchases (rebilled carryover plus purchases)
Less Carryover Inventory
Net 1972 Purchases
Estimated 1973 Net Sales
Estimated 1973 Purchases from Shell

PRODUCT:
Total Previous Year Purchases (rebilled carryover plus purchases)
Less Carryover Inventory
Net 19 Purchases
Estimated 19__ Net Sales
Estimated 19 Purchases from Shell

PRODUCT:
Total Previous Year Purchases (rebilled carryover plus purchases)
Less Carryover Inventory
Net 19 Purchases
Estimated 19__ Net Sales
Estimated 19__ Purchases from Shell

[Trial Exhibit 1071]
[Shell letterhead omitted]
1980 MARKETING AGREEMENT

Jan 23 1980

Brown & Bryant
CUSTOMER
P. O. Bin T
ADDRESS
Shafter, Calif
93263

Dear Mr. Hagenston

It is our desire to enter into an Agreement with you concerning the resale of the Shell pesticides listed in Exhibit A to this Agreement.

Shell's objective in making this Agreement with you is to maximize penetration of Shell's pesticides in your area of primary marketing responsibility, consistent with label directions and pesticide requirements in your area. To accomplish this objective, we believe that a clear understanding of key responsibilities for each party is essential.

I. TERM

The term of this Agreement shall be from the date first written above until December 31, 1980. This Agreement may be cancelled by either party thereto upon the giving of at least 10 days written notice mailed to the other party at its primary business address.

II. AREA OF PRIMARY MARKETING RESPONSIBILITY

Your area of primary marketing responsibility is defined by the following written definition
✓ or attached map .

[Handwritten:] Kings, Tulane, and Kern Counties of Calif.

III. RESPONSIBILITIES

A. Customer Responsibilities

Your organization agrees to assume the following responsibilities:

1. Maintain competent sales and technical personnel sufficient to provide adequate service to customers in the area of primary marketing responsibility (defined above).
2. Be familiar with pest problems in the marketing area and with Agricultural Extension Service recommendations, and instruct the sales force accordingly. Follow instructions on the label and make no claim as to performance or application techniques which are not clearly expressed thereon. Keep customers informed of any label changes and/or recommendations.
3. Maintain adequate inventories of Shell pesticides in order to provide prompt shipments to customers throughout the primary area of responsibility. Product is to be stored in a safe manner in accordance with federal, state and local regulations. Inventory of Shell products should be moved on a first in, first out, basis to insure product and container integrity.

4. Bring in key pesticide personnel for a Shell instructed technical meeting when mutually beneficial. The purpose of this meeting will be to review with your personnel the technical aspects of Shell pesticides, label changes, new labels, as well as pertinent marketing information.
5. Cooperate with Shell in the implementation of its sales, advertising and other promotional programs.
6. Make initial investigations of complaints concerning Shell pesticides reported to you. Promptly relay this information to the Shell sales Representative or District Office in your area. In the case of herbicide complaints, the initial report must be received by Shell within 60 days of application or planting, whichever is later. Cooperate with Shell in the appropriate handling of such product complaints.
7. Inventory Rebilling – Certain products carry an inventory rebilling provision on the price schedule. In order to obtain this inventory rebilling, your organization must complete and return specified forms which will be mailed to your office at the end of the season. All inventory for which rebilling is claimed is subject to audit by Shell and must be reported by location.
8. Sales Tax Exemption – Shell must have a sales tax exemption certificate on file for each state where product(s) is shipped to you to avoid charging you sales tax. Exhibit C lists the states which do not have

a sales tax exemption certificate on file where Shell normally ships product to you. Please complete and sign the sales tax exemption certificates attached to Exhibit C.

9. Customer shall comply with all federal, state and local laws and regulations regarding the storage, transporting, handling and use of Shell pesticides. Customer shall also assure that appropriate measures are taken to protect persons, property and the total environment while they are being stored and transported.

10. Information supplied by Shell regarding the safe handling, use and disposal of Shell products shall be disseminated in a timely manner to all purchasers and end-users of the products listed in Exhibit A. Distributor should discourage unsafe or improper applications of Shell products and should not sell Shell products to anyone who does not use such products in a manner consistent with Shell's recommendations and labels and in a way that protects man and the environment.

B. Shell Responsibilities

In consideration of the above, Shell agrees to:

1. Conduct an advertising campaign which will appear in national as well as local media. In addition, Shell will supply literature and visual material for direct mail and use as sales aids by your marketing organizations.

2. Offer to you, as introduced by Shell, various product promotion programs dealing with Shell pesticides.
3. Assist you and keep you informed of any technical problems concerning Shell pesticides that may arise from their sale or application.
4. Supply informative speakers for your sales meetings and dealer/grower meetings whenever possible.
5. Investigate all pesticide claims which are made within 60 days of either application or planting, whichever is later. Claims after 60 days will be investigated only upon receipt of written notification to Shell's District Office setting forth a satisfactory reason for the delay.

IV. PRICE CHANGES

The attached price schedules are subject to change without notice. However, it is our intention to promptly advise the person designated by you of all price changes. All product will be invoiced at the prices and terms in effect at the time of shipment.

V. AGREEMENT

Having mutually agreed to all of these responsibilities and subject to product availability, Shell's right to allocate scarce product as Shell deems fit, and credit approval, Shell will make available to you and you will endeavor to purchase and resell the quantities of pesticides outlined in Exhibit A. Subject to III above, the prices and terms of sale shall be those set forth in Shell's Order Acknowledgement, and those set forth on

the Distributor Price Schedules, attached hereto as Exhibit B.

VI. ENTIRETY/EXECUTION

This marketing Agreement terminates all prior marketing Agreements, merges with and supersedes all prior presentations and understandings, and constitutes the entire understanding concerning marketing of Shell's pesticides between Shell and Brown & Bryant .
Customer

If the above is acceptable to you, please indicate the same by signing in the space below.

Please return the original and one copy. The other copy is for your files.

/s/ R. Woolley
District Manager

Attachments

/s/ Al Hagenston
Accepted

1/24/80
Date

Please advise the following person
of all price changes:

Al Hagenston
Name

805-746-4971
Phone

PYDRIN® INSECTICIDE

SUPPLEMENT TO 1980 MARKETING AGREEMENT

The following items are conditions of sale for PYDRIN® Insecticide that are additional to those contained in pages 1 through 3 of the 1980 Marketing Agreement.

1. Patent Rights - - PYDRIN is covered by a U.S. patent owned by Sumitomo Chemical Company under which Shell holds rights. Sales of PYDRIN to you carries with it the right under such U.S. patent application (and any patent issuing thereon) to use and sell PYDRIN. However, such sale includes no rights under foreign patents or patent applications.
2. Liability - - Shell's liability for product sold hereunder shall be limited in accordance with the terms of the Notice of Warranty on the product label.

/s/ Al Hagenston	/s/ R. Woolley
ACCEPTED (DISTRIBUTION)	SHELL DISTRICT MANAGER
571 So. Elm, Shafter, Ca.	2/6/80
LOCATION	DATE
1/24/80	
DATE	

EXHIBIT A

SHELL PRODUCTS MARKETING AGREEMENT

ANTICIPATED PURCHASES

PRODUCT: AZODRIN 5	
1978 Actual Carryover Inventory	
1979 Purchases	730 gal
Total Available for Sale in 1979	
Less 1979 Actual Carryover Inventory	0
1979 Net Sales	
1980 Estimated Net Purchases Sales	1000 gal
1980 Estimated Purchases from Shell	
PRODUCT: DD	
1978 Actual Carryover Inventory	0
1979 Purchases	125,000 gal
Total Available for Sale in 1979	
Less 1979Actual Carryover Inventory	0
1979 Net Purchases	
1980 Estimated Net Sales	120,000 gal
1980 Estimated Purchases from Shell	
PRODUCT: NUDRIN 90	
1978 Actual Carryover Inventory	0
1979 Purchases	2500 lbs
Total Available for Sale in 1979	
Less 1979 Actual Carryover Inventory	6 lbs
1979 Net Purchases	
1980 Estimated Net Sales	4,000 lbs

1980 Estimated Purchases from Shell	

PRODUCT: PHOSDRIN 4EC

1978 Actual Carryover Inventory	
1979 Purchases	200 gal
Total Available for Sale in 1979	
Less 1979 Actual Carryover Inventory	0
1979 Net Purchases	
1980 Estimated Net Sales	400 gal
1980 Estimated Purchases from Shell	

PRODUCT: VENDEX 50

1978 Actual Carryover Inventory	
1979 Purchases	4,200 lbs
Total Available for Sale in 1979	
Less 1979 Actual Carryover Inventory	0
1979 Net Purchases	
1980 Estimated Net Sales	5,000 lbs
1980 Estimated Purchases from Shell	

EXHIBIT B

SHELL PRODUCTS MARKETING AGREEMENT

ANTICIPATED PURCHASES

PRODUCT: PYDRIN	
1978 Actual Carryover Inventory	
1979 Purchases	
Total Available for Sale in 1979	
Less 1979 Actual Carryover Inventory	0
1979 Net Purchases	
1980 Estimated Net Purchases	500 gals
1980 Estimated Purchases from Shell	
PRODUCT:	
1978 Actual Carryover Inventory	
1979 Purchases	
Total Available for Sale in 1979	
Less 1979 Actual Carryover Inventory	
1979 Net Purchases	
1980 Estimated Net Purchases	
1980 Estimated Purchases from Shell	

* * *

EXHIBIT C

SALES TAX EXEMPTION CERTIFICATES

Please complete and sign each of the sales tax exemption certificates attached to this Exhibit.

States Where Sales Tax Exemption Certificates Are on File:	States Where Sales Tax Exemption Certificates Are Not on File:

[Trial Exhibit 1072]
[Shell letterhead omitted]
1983 MARKETING AGREEMENT

1/31 1983

Brown & Bryant
CUSTOMER
P O Box 426
ADDRESS
Shafter, Calif
93263

Dear Mr. Hagenston

It is our desire to enter into an Agreement with you concerning the resale of the Shell pesticides listed in Exhibit A to this Agreement.

Shell's objective in making this Agreement with you is to maximize penetration of Shell's pesticides in your area of primary marketing responsibility, consistent with label directions and pesticide requirements in your area. To accomplish this objective, we believe that a clear understanding of key responsibilities for each party is essential.

I. TERM

The term of this Agreement shall be from the date first written above until December 31, 1983. This

Agreement may be cancelled by either party thereto upon the giving of at least 10 days written notice mailed to the other party at its primary business address.

Ex. 1072

II. AREA OF PRIMARY MARKETING RESPONSIBILITY

Your area of primary marketing responsibility is defined by the following written definition
✓ or attached map .

[Handwritten:] Tulane, Kern and Ventura Counties

III. RESPONSIBILITIES

A. Customer Responsibilities

Your organization agrees to assume the following responsibilities:

1. Maintain competent sales and technical personnel sufficient to provide adequate service to customers in the area of primary marketing responsibility (defined above).
2. Be familiar with pest problems in the marketing area and with Agricultural Extension Service recommendations, and instruct the sales force accordingly. Follow instructions on the label and make no claim as to performance or application techniques which are not clearly expressed thereon. Keep customers informed of any label changes and/or recommendations.
3. Maintain adequate inventories of Shell pesticides in order to provide prompt shipments to customers throughout the primary area of responsibility. Product is to be stored in a safe manner in accordance with federal, state and local regulations. Inventory of Shell products should be

moved on a first in, first out, basis to insure product and container integrity.

4. Bring in key pesticide personnel for a Shell instructed technical meeting when mutually beneficial. The purpose of this meeting will be to review with your personnel the technical aspects of Shell pesticides, label changes, new labels, as well as pertinent marketing information.
5. Cooperate with Shell in the implementation of its sales, advertising and other promotional programs.
6. Make initial investigations of complaints concerning Shell pesticides reported to you. Promptly relay this information to the Shell sales Representative or District Office in your area. In the case of herbicide complaints, the initial report must be received by Shell within 60 days of application or planting, whichever is later. Cooperate with Shell in the appropriate handling of such product complaints.
7. Inventory Rebilling – Certain products carry an inventory rebilling provision on the price schedule. In order to obtain this inventory rebilling, your organization must complete and return specified forms which will be mailed to your office at the end of the season. All inventory for which rebilling is claimed is subject to audit by Shell and must be reported by location.
8. Sales Tax Exemption – Shell must have a sales tax exemption certificate on file for each state where product(s) is shipped to

you to avoid charging you sales tax. Exhibit C lists the states which do not have a sales tax exemption certificate on file where Shell normally ships product to you. Please complete and sign the sales tax exemption certificates attached to Exhibit C.

9. Customer shall comply with all federal, state and local laws and regulations regarding the storage, transporting, handling and use of Shell pesticides. Customer shall also assure that appropriate measures are taken to protect persons, property and the total environment while they are being stored and transported.

10. Information supplied by Shell regarding the safe handling, use and disposal of Shell products shall be disseminated in a timely manner to all purchasers and end-users of the products listed in Exhibit A. Distributor should discourage unsafe or improper applications of Shell products and should not sell Shell products to anyone who does not use such products in a manner consistent with Shell's recommendations and labels and in a way that protects man and the environment. Distributor agrees to participate in any training sessions Shell may conduct to enhance the safe handling of Shell products.

B. SHELL RESPONSIBILITIES

In consideration of the above, Shell agrees to:

1. Conduct an advertising campaign which will appear in national as well as local media. In addition, Shell will supply literature and visual material for direct mail and use as sales aids by your marketing organization.
2. Offer to you, as introduced by Shell, various product promotion programs dealing with Shell pesticides.
3. Assist you and keep you informed of any technical problems concerning Shell pesticides that may arise from their sale or application.
4. Supply informative speakers for your sales meetings and dealer/grower meetings whenever possible.
5. Investigate all pesticide claims which are made within 60 days of either application or planting, whichever is later. Claims after 60 days will be investigated only upon receipt or written notification to Shell's District Office setting forth a satisfactory reason for the delay.

IV. PRICE CHANGES

The attached price schedules are subject to change without notice. However, it is our intention to promptly advise the person designated by you of all price changes. All product will be invoiced at the prices and terms in effect at the time of shipment.

V. Having mutually agreed to all of these responsibilities and subject to product availability, Shell's right to allocate scarce product as Shell deems fit, and credit approval, Shell will make available to you and you will endeavor to purchase and resell the quantities of pesticides outlined in Exhibit A. Subject to III above, the prices and terms of sale shall be those set forth in Shell's Order Acknowledgement, and those set forth on the Distributor Price Schedules, attached hereto as Exhibit B.

VI. ENTIRETY/EXECUTION

This marketing Agreement terminates all prior marketing Agreements, merges with and supersedes all prior presentations and understandings, and constitutes the entire understanding concerning marketing of Shell's pesticides between Shell and Brown & Bryant .
Customer

If the above is acceptable to you, please indicate the same by signing in the space below.

Please return the original and one copy. The other copy is for your files.

/s/ Ray Wisnom
District Manager

Attachments

/s/ Al Hagenston
Accepted

1/31/83
Date

Please advise the following person
of all price changes:

Al Hagenston
Name

805-746-4971
Phone

EXHIBIT A

SHELL PRODUCTS MARKETING AGREEMENT

ANTICIPATED PURCHASES

PRODUCT: Azodrin 5	
1981 Actual Carryover Inventory	0
1982 Purchases	0
Total Available for Sales in 1982	0
Less 1982 Actual Carryover Inventory	0
1982 Net Sales	0
1983 Estimated Net Sales	250
1983 Estimated Purchases from Shell	250 gallons
PRODUCT: Bladex 80w	
1981 Actual Carryover Inventory	0
1982 Purchases	2,000
Total Available for Sales in 1982	2,000
Less 1982 Actual Carryover Inventory	150
1982 Net Sales	1850
1983 Estimated Net Sales	5000
1983 Estimated Purchases from Shell	4850 lbs
PRODUCT: D-D	
1981 Actual Carryover Inventory	0
1982 Purchases	141.0
Total Available for Sales in 1982	141.0
Less 1982 Actual Carryover Inventory	0
1982 Net Sales	141.0
1983 Estimated Net Sales	135.0

1983 Estimated Purchases from Shell	135.0 gallons
PRODUCT: Nudrin 90 sp	
1981 Actual Carryover Inventory	0
1982 Purchases	1620
Total Available for Sales in 1982	1620
Less 1982 Actual Carryover Inventory	0
1982 Net Sales	1620
1983 Estimated Net Sales	3100
1983 Estimated Purchases from Shell	3100
PRODUCT: Pydrin 2.4	
1981 Actual Carryover Inventory	0
1982 Purchases	192
Total Available for Sales in 1982	192
Less 1982 Actual Carryover Inventory	0
1982 Net Sales	192
1983 Estimated Net Sales	250
1983 Estimated Purchases from Shell	250
PRODUCT: Vendex 50w	
1981 Actual Carryover Inventory	500 lbs
1982 Purchases	0
Total Available for Sales in 1982	500
Less 1982 Actual Carryover Inventory	0
1982 Net Sales	500
1983 Estimated Net Sales	4000

1983 Estimated Purchases from Shell	4000

PRODUCT:

1981 Actual Carryover Inventory

1982 Purchases

Total Available for Sales in 1982

Less 1982 Actual Carryover Inventory

1982 Net Sales

1983 Estimated Net Sales

1983 Estimated Purchases from Shell

* * *

[Logo omitted]	SHELL CHEMICAL COMPANY SALES TAX EXEMPTION CERTIFICATE	CUSTOMER NO. STATE OF

T O	Shell Oil Company Tax Reports P O Box 20329 Houston, Texas 77025	F R O M	Purchaser Address City, State

IMPORTANT: SEE REVERSE SIDE FOR INSTRUCTIONS

UNLESS THIS CERTIFICATE IS MARKED BELOW AS SINGLE PURCHASE CERTIFICATE, IT SHALL BE CONSIDERED PART OF ANY ORDER GIVEN TO YOU AND SHALL REMAIN IN FORCE UNTIL REVOKED BY WRITTEN NOTICE TO YOU

□ SINGLE PURCHASE CERTIFICATE □ BLANKET CERTIFICATE

[Handwritten notation omitted]

CERTIFICATION: CHECK APPROPRIATE EXEMPTION

I AM ENGAGED IN THE BUSINESS OF AND ALL TANGIBLE PERSONAL PROPERTY PURCHASED BY THE UNDERSIGNED FROM YOU WILL BE PURCHASED FOR USE AS FOLLOWS:

□ FOR RESALE AS TANGIBLE PERSONAL PROPERTY AS RECEIVED FROM YOU
I HEREBY CERTIFY THAT I HOLD A VALID SELLER'S PERMIT NO

ISSUED ON DATE | BY STATE OF STATE

☐ TO BE INCORPORATED AS A MATERIAL OR PART OF OTHER TANGIBLE PERSONAL PROPERTY TO BE PRODUCED FOR SALE BY MANUFACTURING, ASSEMBLING, PROCESSING OR REFINING

OTHER DESCRIBE EXEMPT USE AND SPECIFY SECTION OF SALES AND USE TAX ACT COVERING THIS EXEMPTION

IN THE EVENT ANY SUCH PROPERTY IS USED FOR ANY PURPOSE OTHER THAN RETENTION, DEMONSTRATION OR DISPLAY WHILE HOLDING IT FOR SALE OR USE AS ABOVE IN THE REGULAR COURSE OF BUSINESS, IT IS UNDERSTOOD THAT I AM REQUIRED BY THE SALES AND THE USE TAX ACT TO REPORT AND PAY TAX MEASURED BY THE PURCHASE PRICE OF SUCH PROPERTY

DESCRIPTION OF PROPERTY TO BE PURCHASED FOR AN EXEMPT PURPOSE
LIST PRODUCTS

SIGNED BY | TITLE | DATE

PYDRIN® INSECTICIDE

SUPPLEMENT TO 1983 MARKETING AGREEMENT

The following items are conditions of sale for PYDRIN® Insecticide that are additional to those contained in pages 1 through 3 of the 1983 Marketing Agreement.

1. Patent Rights -- PYDRIN is covered by a U.S. patent owned by Sumitomo Chemical Company under which Shell holds rights. Sales of PYDRIN to you carries with it the right under such U.S. patent application (and any patent issuing thereon) to use and sell PYDRIN. However, such sale includes no rights under foreign patents or patent applications.
2. Liability -- Shell's liability for product sold hereunder shall be limited in accordance with the terms of the Notice of Warranty on the product label.

/s/ Al Hagenston
ACCEPTED
(DISTRIBUTION)

Brown & Bryant
PO Box 426
LOCATION
Shafter /Arvin
Kern Co/Calif.
1/31/83
DATE

/s/ Ray Wisnom
SHELL DISTRICT
MANAGER

2/15/83

1/31/83
DATE

[Trial Exhibit 1073]
[Shell letterhead omitted]
1984 MARKETING AGREEMENT

1/25/ 1984

BROWN & BRYANT
CUSTOMER
P O BIN T
ADDRESS
SHAFTER, CALIF 93263

Dear Mr. Hagenston

It is our desire to enter into an Agreement with you concerning the resale of the Shell pesticides listed in Exhibit A to this Agreement.

Shell's objective in making this Agreement with you is to maximize penetration of Shell's pesticides in your area of primary marketing responsibility, consistent with label directions and pesticide requirements in your area. To accomplish this objective, we believe that a clear understanding of key responsibilities for each party is essential.

I. TERM

The term of this Agreement shall be from the date first written above until December 31, 1984. This Agreement may be cancelled by either party thereto upon the giving of at least 10 days written notice mailed to the other party at its primary business address.

II. AREA OF PRIMARY MARKETING RESPONSIBILITY

Your area of primary marketing responsibility is defined by the following written definition
✓ or attached map .

[Handwritten:] Tulane, Kern and Ventura Counties of Calif.

III. RESPONSIBILITIES

A. Customer Responsibilities

Your organization agrees to assume the following responsibilities:

1. Maintain competent sales and technical personnel sufficient to provide adequate service to customers in the area of primary marketing responsibility (defined above).
2. Be familiar with pest problems in the marketing area and with Agricultural Extension Service recommendations, and instruct the sales force accordingly. Follow instructions on the label and make no claim as to performance or application techniques which are not clearly expressed thereon. Keep customers informed of any label changes and/or recommendations.
3. Maintain adequate inventories of Shell pesticides in order to provide prompt shipments to customers throughout the primary area of responsibility. Product is to be stored in a safe manner in accordance with federal, state and local regulations. Inventory of Shell products should be moved on a first in, first out, basis to insure product and container integrity.

4. Bring in key pesticide personnel for a Shell instructed technical meeting when mutually beneficial. The purpose of this meeting will be to review with your personnel the technical aspects of Shell pesticides, label changes, new labels, as well as pertinent marketing information.
5. Cooperate with Shell in the implementation of its sales, advertising and other promotional programs.
6. Make initial investigations of complaints concerning Shell pesticides reported to you. Promptly relay this information to the Shell sales Representative or District Office in your Area. In the case of herbicide complaints, the initial report must be received by Shell within 60 days of application or planting, whichever is later. Cooperate with Shell in the appropriate handling of such product complaints.
7. Inventory Rebilling – Certain products carry an inventory rebilling provision on the price schedule. In order to obtain this inventory rebilling, your organization must complete and return specified forms which will be mailed to your office at the end of the season. All inventory for which rebilling is claimed is subject to audit by Shell and must be reported by location.
8. Sales Tax Exemption – Shell must have a sales tax exemption certificate on file for each state where product(s) is shipped to you to avoid charging you sales tax. Exhibit C lists the states which do not have

a sales tax exemption certificate on file where Shell normally ships product to you. Please complete and sign the sales tax exemption certificates attached to Exhibit C.

9. Customer shall comply with all federal, state and local laws and regulations regarding the storage, transporting, handling and use of Shell pesticides. Customer shall also assure that appropriate measures are taken to protect persons, property and the total environment while they are being stored and transported.

10. Information supplied by Shell regarding the safe handling, use and disposal of Shell products shall be disseminated in a timely manner to all purchasers and end-users of the products listed in Exhibit A. Distributor should discourage unsafe or improper applications of Shell products and should not sell Shell products to anyone who does not use such products in a manner consistent with Shell's recommendations and labels and in a way that protects man and the environment. Distributor agrees to participate in any training sessions Shell may conduct to enhance the safe handling of Shell products.

B. Shell Responsibilities

In consideration of the above, Shell agrees to:

1. Conduct an advertising campaign which will appear in national as well as local

media. In addition, Shell will supply literature and visual material for direct mail and use as sales aids by your marketing organizations.

2. Offer to you, as introduced by Shell, various product promotion programs dealing with Shell pesticides.
3. Assist you and keep you informed of any technical problems concerning Shell pesticides that may arise from their sale or application.
4. Supply informative speakers for your sales meetings and dealer/grower meetings whenever possible.
5. Investigate all pesticide claims which are made within 60 days of either application or planting, whichever is later. Claims after 60 days will be investigated only upon receipt or written notification to Shell's District Office setting forth a satisfactory reason for the delay.

IV. PRICE CHANGES

The attached price schedules are subject to change without notice. However, it is our intention to promptly advise the person designated by you of all price changes. All product will be invoiced at the prices and terms in effect at the time of shipment.

V. Having mutually agreed to all of these responsibilities and subject to product availability, Shell's right to allocate scarce product as Shell deems fit, and credit approval, Shell will make available to you and you will endeavor to purchase and resell the quantities of pesticides outlined in Exhibit A. Subject to III above, the prices and terms of sale shall be those set forth in Shell's Order Acknowledgement, and those set forth on the Distributor Price Schedules, attached hereto as Exhibit B.

VI. ENTIRETY/EXECUTION

This marketing Agreement terminates all prior marketing Agreements, merges with and supersedes all prior presentations and understandings, and constitutes the entire understanding concerning marketing of Shell's pesticides between Shell and Brown & Bryant .
Customer

If the above is acceptable to you, please indicate the same by signing in the space below.

Please return the original and one copy. The other copy is for your files.

/s/ Ray Wisnom
District Manager

Attachments

/s/ Al Hagenston
Accepted

1/25/84
Date

Please advise the following person
of all price changes:

Al Hagenston
Name

805-746-4971
Phone

PYDRIN® INSECTICIDE

SUPPLEMENT TO 1984 MARKETING AGREEMENT

The following items are conditions of sale for PYDRIN® Insecticide that are additional to those contained in pages 1 through 3 of the 1984 Marketing Agreement.

1. Patent Rights – PYDRIN is covered by a U.S. patent owned by Sumitomo Chemical Company under which Shell holds rights. Sales of PYDRIN to you carries with it the right under such U.S. patent application (and any patent issuing thereon) to use and sell PYDRIN. However, such sale includes no rights under foreign patents or patent applications.
2. Liability – Shell's liability for product sold hereunder shall be limited in accordance with the terms of the Notice of Warranty on the product label.

/s/ Al Hagenston	/s/ Ray Wisnom
ACCEPTED (DISTRIBUTION)	SHELL DISTRICT MANAGER
Shafter, Ca	1/27/84
LOCATION	DATE
1/25/84	
DATE	

EXHIBIT A

SHELL PRODUCTS MARKETING AGREEMENT

ANTICIPATED PURCHASES

PRODUCT: AZODRIN	
1982 Actual Carryover Inventory	0
1983 Purchases	0
Total Available for Sale in 1983	0
Less 1983 Actual Carryover Inventory	0
1983 Net Sales	0
1984 Estimated Net Sales	.3 gal
1984 Estimated Purchases from Shell	.3 gal
PRODUCT: BLADEX 4L	
1982 Actual Carryover Inventory	0
1983 Purchases	.4 gal
Total Available for Sale in 1983	.4 gal
Less 1983 Actual Carryover Inventory	.2 gal
1983 Net Sales	.2 gal
1984 Estimated Net Sales	2.0 gal
1984 Estimated Purchases from Shell	2.2
PRODUCT: DD	
1982 Actual Carryover Inventory	0
1983 Purchases	132,430 gal
Total Available for Sale in 1983	132,430 gal
Less 1983 Actual Carryover Inventory	0
1983 Net Sales	132,430
1984 Estimated Net Sales	26.0 gal

1984 Estimated Purchases from Shell	26.0 gal
PRODUCT: NUDRIN 90	
1982 Actual Carryover Inventory	0
1983 Purchases	4860 lbs
Total Available for Sale in 1983	4860 lbs
Less 1983 Actual Carryover Inventory	860 lbs
1983 Net Sales	4000 lbs
1984 Estimated Net Sales	6.0 lbs
1984 Estimated Purchases from Shell	6.8 lbs
PRODUCT: PHOSDRIN 2/EC	
1982 Actual Carryover Inventory	
1983 Purchases	0
Total Available for Sale in 1983	0
Less 1983 Actual Carryover Inventory	0
1983 Net Sales	0
1984 Estimated Net Sales	.2
1984 Estimated Purchases from Shell	.2
PRODUCT: PYDRIN	
1982 Actual Carryover Inventory	0
1983 Purchases	0
Total Available for Sale in 1983	0
Less 1983 Actual Carryover Inventory	0
1983 Net Sales	0
1984 Estimated Net Sales	.2

1984 Estimated Purchases from Shell	.2

PRODUCT: VENDEX 4L

1982 Actual Carryover Inventory	0
1983 Purchases	432 gal
Total Available for Sale in 1983	432 gal
Less 1983 Actual Carryover Inventory	327 gal
1983 Net Sales	105 gal
1984 Estimated Net Sales	3 gal
1984 Estimated Purchases from Shell	637 gal

PRODUCT: VENDEX 50W

1982 Actual Carryover Inventory	0
1983 Purchases	0
Total Available for Sale in 1983	0
Less 1983 Actual Carryover Inventory	0
1983 Net Sales	0
1984 Estimated Net Sales	0
1984 Estimated Purchases from Shell	0

[Trial Exhibit 1075]
[Shell letterhead omitted]

1986 MARKETING AGREEMENT

February 21, 1986

Mr. Jack Brown
Brown & Bryant
P. O. Bin T
Shafter, CA 93263

Dear Mr. Brown

It is our desire to enter into an Agreement with you concerning the resale of the Shell pesticides listed in Exhibit A to this Agreement.

Shell's objective in making this Agreement with you is to maximize penetration of Shell's pesticides in your area of primary marketing responsibility, consistent with label directions and pesticide requirements in your area. To accomplish this objective, we believe that a clear understanding of key responsibilities for each party is essential.

I. TERM

The term of this Agreement shall be from the date first written above until December 31, 1986. This Agreement may be cancelled by either party thereto upon the giving of at least 10 days written notice mailed to the other party at its primary business address.

II. AREA OF PRIMARY MARKETING RESPONSIBILITY

Your area of primary marketing responsibility is defined by the following written definition ✓ or attached map .

[Handwritten:] Tulane, Kern and Ventura Counties of Calif.

III. RESPONSIBILITIES

A. Customer Responsibilities

Your organization agrees to assume the following responsibilities:

1. Maintain competent sales and technical personnel sufficient to provide adequate service to customers in the area of primary marketing responsibility (defined above).
2. Be familiar with pest problems in the marketing area and with Agricultural Extension Service recommendations, and instruct the sales force accordingly. Follow instructions on the label and make no claim as to performance or application techniques which are not clearly expressed thereon. Keep customers informed of any label changes and/or recommendations.
3. Maintain adequate inventories of Shell pesticides in order to provide prompt shipments to customers throughout the primary area of responsibility. Product is to be stored in a safe manner in accordance with federal, state and local regulations. Inventory of Shell products should be moved on a first in, first out, basis to insure product and container integrity.

4. Bring in key pesticide personnel for a Shell instructed technical meeting when mutually beneficial. The purpose of this meeting will be to review with your personnel the technical aspects of Shell pesticides, label changes, new labels, as well as pertinent marketing information.
5. Cooperate with Shell in the implementation of its sales, advertising and other promotional programs.
6. Make initial investigations of complaints concerning Shell pesticides reported to you. Promptly relay this information to the Shell sales Representative or District Office in your area. In the case of herbicide complaints, the initial report must be received by Shell within 60 days of application or planting, whichever is later. Cooperate with Shell in the appropriate handling of such product complaints.
7. Inventory Rebilling – Certain products carry an inventory rebilling provision on the price schedule. In order to obtain this inventory rebilling, your organization must complete and return specified forms which will be mailed to your office at the end of the season. All inventory for which rebilling is claimed is subject to audit by Shell and must be reported by location.
8. Sales Tax Exemption – Shell must have a sales tax exemption certificate on file for each state where product(s) is shipped to you to avoid charging you sales tax. If we determine that you do not have a sales tax

exemption certificate on file where Shell ships product to you, we will ask you to complete, sign and return a sales tax exemption certificate for that state(s).

9. Customer shall comply with all federal, state and local laws and regulations regarding the storage, transporting, handling and use of Shell pesticides. Customer shall also assure that appropriate measures are taken to protect persons, property and the total environment while they are being stored and transported.
10. Information supplied by Shell regarding the safe handling, use and disposal of Shell products shall be disseminated in a timely manner to all purchasers and end-users of the products listed in Exhibit A. Distributor should discourage unsafe or improper applications of Shell products and should not sell Shell products to anyone who does not use such products in a manner consistent with Shell's recommendations and labels and in a way that protects man and the environment. Distributor agrees to participate in any training sessions Shell may conduct to enhance the safe handling of Shell products.

B. Shell Responsibilities

In consideration of the above, Shell agrees to:

1. Conduct an advertising campaign which will appear in national as well as local media. In addition, Shell will supply

literature and visual material for direct mail and use as sales aids by your marketing organization.

2. Offer to you, as introduced by Shell, various product promotion programs dealing with Shell pesticides.
3. Assist you and keep you informed of any technical problems concerning Shell pesticides that may arise from their sale or application.
4. Supply informative speakers for your sales meetings and dealer/grower meetings whenever possible.
5. Investigate all pesticide claims which are made within 60 days of either application or planting, whichever is later. Claims after 60 days will be investigated only upon receipt of written notification to Shell's District Office setting forth a satisfactory reason for the delay.

IV. PRICE CHANGES

Shell price schedules are subject to change without notice. However, it is our intention to promptly advise the person designated by you of all price changes. All product will be invoiced at the prices and terms in effect at the time of shipment.

V. Having mutually agreed to all of these responsibilities and subject to product availability, Shell's right to allocate scarce product as Shell deems fit, and credit approval, Shell will make available to you and you will endeavor to purchase and resell the quantities of pesticides outlined in Exhibit A. Subject to III above, the prices and terms of sale shall be those set forth in Shell's Order Acknowledgement, and those set forth on the Distributor Price Schedules.

VI. ENTIRETY/EXECUTION

This marketing Agreement terminates all prior marketing Agreements, merges with and supersedes all prior presentations and understandings, and constitutes the entire understanding concerning marketing of Shell's pesticides between Shell and Brown & Bryant.

If the above is acceptable to you, please indicate the same by signing in the space below.

Please return the original. The other copy is for your files.

/s/ Ray Wisnom
G. R. Wisnom
District Manager

Attachments

/s/ Al Hagenston
Accepted

3/[illegible]/86
Date

Please advise the following person
of all price changes:

Al Hagenston
Name

805-746-4971
Phone

EXHIBIT A

BROWN & BRYANT

SHELL PRODUCTS MARKETING AGREEMENT
ANTICIPATED PURCHASES

PRODUCT: BLADEX® 4L HERBICIDE	LBS./ GALS.
1984 Actual Carryover Inventory	0
1985 Purchases	1300
Total Available for Sale in 1985	1300
Less 1985 Actual Carryover Inventory	400
1985 Net Sales	900
1986 Estimated Net Sales	1400
1986 Estimated Purchases from Shell	1000
PRODUCT: PYDRIN® 2.4 INSECTICIDE	
1984 Actual Carryover Inventory	0
1985 Purchases	192
Total Available for Sale in 1985	192
Less 1985 Actual Carryover Inventory	56
1985 Net Sales	136
1986 Estimated Net Sales	200
1986 Estimated Purchases from Shell	144
PRODUCT: NUDRIN® 90 INSECTICIDE	
1984 Actual Carryover Inventory	0
1985 Purchases	2700
Total Available for Sale in 1985	2700
Less 1985 Actual Carryover	0

Inventory	
1985 Net Sales	2700
1986 Estimated Net Sales	4000
1986 Estimated Purchases from Shell	4000
PRODUCT: AZOBRIN® INSECTICIDE	
1984 Actual Carryover Inventory	0
1985 Purchases	189
Total Available for Sale in 1985	189
Less 1985 Actual Carryover Inventory	93
1985 Net Sales	96
1986 Estimated Net Sales	200
1986 Estimated Purchases from Shell	177
PRODUCT: PHOSDRIN® 4 INSECTICIDE	
1984 Actual Carryover Inventory	
1985 Purchases	190
Total Available for Sale in 1985	190
Less 1985 Actual Carryover Inventory	
1985 Net Sales	190
1986 Estimated Net Sales	200
1986 Estimated Purchases from Shell	200
PRODUCT: VENDEX® 4L MITICIDE	
1984 Actual Carryover Inventory	412
1985 Purchases	
Total Available for Sale in 1985	412
Less 1985 Actual Carryover Inventory	372
1985 Net Sales	40
1986 Estimated Net Sales	
1986 Estimated Purchases from Shell	

PRODUCT: VENDEX® 50WP MITICIDE	
1984 Actual Carryover Inventory	156
1985 Purchases	7,296
Total Available for Sale in 1985	7,452
Less 1985 Actual Carryover Inventory	1,344
1985 Net Sales	6,108
1986 Estimated Net Sales	8,000
1986 Estimated Purchases from Shell	6,656

PRODUCT:	
1984 Actual Carryover Inventory	
1985 Purchases	
Total Available for Sale in 1985	
Less 1985 Actual Carryover Inventory	
1985 Net Sales	
1986 Estimated Net Sales	
1986 Estimated Purchases from Shell	

* * *

[Shell letterhead omitted]

SHELL ATRAZINE (BULK PRODUCT)
Distributor Price Schedule
ISSUED: 2/11/86
SUPERSEDES: 11/18/85

PRICES FOR THE UNITED STATES
(Except Alaska and Hawaii)

Effective February 4, 1986, and extending until further notice, the following prices (F.O.B. destination) will apply on Shell Atrazine Herbicide:

	QUANTITY	PER GALLON
Shell Atrazine 4L-8	TT (Tank Truck)	$7.35

TERMS AND CONDITIONS

1. Prices – exclusive of any applicable sales and other excise taxes, and same will be added to such prices.
2. Terms – Due net 30 days, except:
   a. All 1985 protected inventory due 12/15/85 at 1985 truckload list price as issued on 11/1/84 Distributor Price Schedule or payable at the distributor's option 1/10/86 at 1986 truckload list price with 3.5 percent discount, net due 1/11/86.
   b. Deliveries in the following time periods are eligible for the indicated discounts if paid by the cash discount due date.

DELIVERY DATES	CASH DISCOUNT AND DUE DATES			
	4/10/86	5/10/86	6/10/86	NET DUE
11/1/85 - 3/31/86*	3.5%	2.5%	1.5%	6/11/86
4/1/86 - 4/30/86		2.5%	1.5%	6/11/86
5/1/86 - 5/31/86			1.5%	6/11/86
6/1/86 - Later	Net 30 days			

Note: Orders must be placed two weeks prior to the end of a delivery period in order to insure delivery, thus qualifying for applicable cash discounts.

*Shipments will be allowed from 12/15/85 to 2/28/86, conditions permitting.

The cash discount in effect at the time of invoice payment may be deducted from the invoice amount.

In those instances where a shipment is delayed due to lack of supply, the discount dates will be adjusted to allow the appropriate discounts as if the shipment had been made on time.

Shell reserves the right to allocate deliveries as Shell deems fit in the event orders exceed supply capability. In the event Shell must allocate deliveries, the discount date will be the date of actual delivery to the customer.

3. Finance Charge – A finance charge of up to 2 percent per month, or the highest rate allowed by law, whichever is less, will be imposed on all past due balances.
4. Inventory Protection – Inventory protection is provided for up to 12 percent of the total dollar amount of Shell Atrazine and BLADEX® Herbicide

purchases between November 15, 1985 and May 31, 1986, excluding 1985 rebilled carryover inventory. Shell will issue a check, to be received by the distributor no later than June 30, 1986. No check will be issued for less than $5,000.

Inventories are to be reported by August 15, 1986. If inventories are not reported by August 15, 1986, the distributor will be invoiced for the dollar amount – 12 percent of eligible purchases – previously paid under this inventory protection program and will be due 10 days from date of invoice. Shell reserves the right to verify all inventories.

In order to qualify for inventory protection, the following conditions must be met:

a. Distributor's account must be current as of June 11, 1986.

b. All eligible inventories are subject to verification at Shell's sole option. Inventories claimed at retail dealer locations must be supported with a copy of the distributor's actual rebilling invoice of the dealers inventory. If a distributor's reported inventory value is less than 12 percent of purchases, the distributor will receive an invoice for the difference which will be payable upon receipt.

c. Distributor or Dealer, whichever is appropriate, shall retain title and assume all the risk of loss and expense incurred in warehousing, storage, selling, and transporting products covered by this program.

   On November 15, 1986, the distributor will be invoiced for the dollar amount of inventory

refunded by Shell. The resulting invoice will be due net on December 15, 1986.

5. Delivery Quantities

   Tank Truck Deliveries (TT) – Orders for at least 4,600 gallons to a single destination by common carrier.

   LTT Deliveries – On orders of less than 4,600 gallons or more than one drop, $75 per ship-to location will be added to the invoice. Minimum order/drop – 1,000 gallons per location by common carrier only. Delivery of a 1,000 gallon order/drop will be dependent on Shell's ability to combine this order/drop with others totaling 2,000 gallons or more.

6. Shrinkage – Single and multiple destination deliveries by common carrier will be allowed 0.5 percent on a weight basis for shrinkage that may occur at time of unloading. The shrinkage allowance will be deducted off the billing invoice.

7. Billing

   a. One Drop Deliveries – Delivered amounts of Shell Atrazine 4L-B will be calculated from certified weight tickets obtained at the El Paso Plant.

   b. Multiple Drops by Common Carrier – Distributors will be invoiced for gallons based on the certified weight tickets obtained at the El Paso Plant. Deliveries will continue to be weighed at destination.

      Net weights will be converted to gallons using a factor of 9.26 pounds per gallon or the proper factor should be temperatures change, thus affecting bulk density.

8. Shell Atrazine 4L-B Unloading Policy – There will be no charge assessed to common carrier tank truck shipments unloaded within two hours after arrival at each destination location. After two hours, unloading charges based on the tariff will be for the distributor's account.
9. D.O.T. Classification – None.
10. Bill of Lading Description – Weed killing compounds, N.O.I.

* * *

[Shell letterhead omitted]

SHELL BULK HERBICIDES
CUSTOMER PICK UP INFORMATION

1. Ordering * * *

2. Destination Tank Inspection * * *

3. Scheduling * * *

4. Bulk Loading Hours * * *

5. Shell Equipment Inspection * * *

PLEASE NOTE SHELL RESERVES THE RIGHT TO REJECT ANY EQUIPMENT THAT IT BELIEVES TO BE UNSUITABLE FOR HANDLING AND HAULING SHELL HERBICIDES. THE DRIVER WILL BE ASKED TO REMOVE REJECTED EQUIPMENT FROM THE PREMISES UNTIL SPECIFIED PROBLEMS ARE CORRECTED.

* * *

JA-501

[Shell letterhead omitted]

PYDRIN INSECTICIDE 2.4 LC

DISTRIBUTOR PRICE SCHEDULE

ISSUED: 6/20/86
SUPERSEDES: 2/10/86

PRICES FOR THE CONTINENTAL UNITED STATES

Effective June 20, 1986, and extending until further notice, the following prices will apply to PYDRIN 2.4 EC Insecticide.

Container	Pounds Gross Container Weight	Gallons Per Pallet	Price FOB Destination
1 - Quart	24.0	112.5	$ 21.70/qt
(6 X 1 per case	lb/case		$ 130.20/case
1-Quart	18.7	120	$ 21.70/qt
(8 X 1 per case)	lb/case		$ 173.60/case
1 - Gallon	36.3	192	$ 86.40/gal
(4 X 1 per case)	lb/case		$ 345.60/case
5 - Gallon	45.0 lb/ container	165	$ 86.40/gal
			$ 432.00/5 gal
30 - Gallon	271.0 lb/drum		$ 82.20/gal
			$ 2,556.00/drum

TERMS AND CONDITIONS:

* * *

7. SHRINKAGE ALLOWANCE – A 1% shrinkage allowance will be given off invoice for purchase of 30 gallon drums.

* * *

[Shell letterhead omitted]

PAY-OFF 2.5 EC INSECTICIDE

DISTRIBUTOR PRICE SCHEDULE

ISSUED: 6/20/86
SUPERSEDES: 4/3/86

PRICES FOR THE CONTINENTAL UNITED STATES

Effective June 20, 1986, and extending until further notice, the following prices will apply to PAY-OFF 2.5 EC Insecticide.

Container	Pounds Gross Container Weight	Gallons Per Pallet	Price FOB Destination
1 - Quart	10.48	75	$ 56.75/qt
(4 X 1 per case)	lb/case		$ 227.00/case
1 – Gallon	41.25	72	$ 225.00/gal
(4 X 1 per case)	lb/case		$ 900.00/case
30 – Gallon			$ 222.00/gal
			$ 6,660.00/drum

TERMS AND CONDITIONS:

1. PRICE – Price is exclusive of any applicable sales and other excise taxes and the same will be added to such price.
2. FREIGHT ALLOWANCE – Distributor pickups will be allowed $.50/gallon. Responsibility for, and title to the product pass to the customers upon

taking possession at the time of pick-up.

3. TERMS – Payment due October 1, 1986 on any product purchased from June 20, 1986, through September 1, 1986. Purchases after September 1, 1986, terms are net due of second month proximo (60 days from end of month invoiced). No cash discount for early payment will be offered.
4. FINANCE CHARGE – A finance charge of up to 7% per month, or the highest rate allowed by law, whichever is less, will be imposed on all past due balances.
5. MINIMUM DELIVERY QUANTITY – Minimum delivery quantity is one pallet per container size and one 30 gallon drum. Deliveries of product above the minimum will be in full pallets only.
6. INVENTORY PROTECTION – 100% of purchases made between January 1, 1986 and September 30, 1986 and remaining in inventory on September 30, 1986 may be returned (full pallets only) to nearest Shell Warehouse or rebilled. Distributors will be invoiced for the net amount with payment due on July 10, 1987. Prices and conditions that apply on the date of invoicing will apply to the rebilled inventory. A special freight, handling and storage allowance of $.75 per gallon will be allowed on rebilled product.
7. SHRINKAGE ALLOWANCE – A 1% shrinkage allowance will be given off invoice for purchase of 30 gallon drums.

JA-505

[Trial Exhibit 1087]

D-D® SOIL FUMIGANT INSPECTION SUMMARY

BROWN & BRYANT

Arvin, California

During the brief inspection of the customer's D-D Soil Fumigant storage and handling operations, we observed a number of conditions which do not meet the requirements suggested in the Shell D-D Soil Fumigant Handling and Safety Manual. Specific items which were observed and to which further attention is suggested include:

1. Greater emphasis should be placed on the personnel safety program. Each service man should be instructed in the use of, and have access to, the required safety equipment. Preferably, each service man should have a personal issue of the more intimate safety items.
2. There is no evidence that the storage tank is of a code design or has a frangible roof-to-shell joint. The existance of such a joint should be verified or an emergency relief device provided. One suggested method to satisfy this requirement is to revise the roof manhole cover so it can lift on overpressure.
3. The 2" open breather vent is too small and is not fitted with flame arrester protection, as required by NFPA-30. Shell recommends the use of an appropriately sized closed type pressure/vacuum relief without a flame arrester. The RV/VB could be installed on the roof manhole cover. This revision, along with the emergency relief protection, could be accommodated without a tank outage.

4. The tank and all transfer equipment must be grounded to bleed off any static charge.
5. The plastic tubing used for tank level indication is very effective but susceptible to damage. A float type or possibly a bubbler type level indicator is preferred.
6. Product transfers are not being made through use of a closed system as per state regulation.
7. All valves communicating with the tank liquid zone should be of a fire safe design and locked closed when not in use.
8. The design of the proposed impoundment basin should include a basin liner and a sealed transfer system that will minimize any soil penetration by D-D or other agricultural chemicals. Shell would prefer to see a dike enclosure around the D-D tank for complete containment of any spill.

The above items along with several other minor conditions were discussed with Jack Brown of Brown & Bryant and John Mitchell of Shell following the inspection.

The discussion included a review of the previously issued Shell D-D Soil Fumigant Handling & Safety Manual which covers or makes reference to all requirements for the handling and safe storage of D-D. While there is no one item sufficiently serious to require immediate attention, it would be prudent to correct the noted items at the earliest convenience. While no warranty is expressed or implied, these suggestions and recommendations represent our approach to what we believe to be reasonably safe facilities.

RWS:tj
1/31/80

JA-508

[Trial Exhibit 1088]

[Shell logo omitted] February 19, 1980

[Date received stamp omitted]

[Distribution list omitted]

FROM: R. W. SWAIN - MECHANICAL EQUIPMENT – ENGINEERING SERVICES - ENGINEERING PRODUCTS

TO: MANAGER - CHEMICAL PRODUCTS - AGRIBUSINESS PRODUCT SALES - IN&M

SUBJECT: TECHNICAL AUDIT OF D-D® SOIL FUMIGANT BULK HANDLING FACILITIES

The attached final check-lists supersede and replace the preliminary draft issued to the customer at the time of the inspection. Such preliminary drafts should no longer be used.

As previously issued, these check-list cover the second of a series of inspections on a pilot program designed to provide guidance to customers with regard to their D-D Soil Fumigant bulk handling facilities. These inspections are in the form of a technical audit in which the customer's facilities are inspected and then reviewed with him for compliance with the Shell D-D Soil Fumigant Handling and Safety Manual. The check-list is used for this purpose. Of the several conditions observed, further attention should be directed to those noted on the inspection summary. The check-list and inspection summary have been

prepared in a form so they could be forwarded to the customer should you care to do so.

The second inspections covered the customers locations as noted below:

Valley Nitrogen Procedures - AFC Division
Edison, California

Brown & Bryant
Arvin, California

Southern Valley Chemical Company
Arvin, California

Occidental Chemical Company
Arvin, California

Brea Agricultural Services
Heber, California

Western Farm Services, Inc.
Imperial, California

Drewry Chemical Company
Imperial, California
(For discussion only on their proposed soil fumigant bulk handling facilities)

[Handwritten note omitted]

This series of inspections found that not one of the customers visited had a totally satisfactory spill containment system. Several installations had no spill containment provisions whatsoever.

The use of a closed transfer and/or mixing system, per state regulations, was not found. Essentially all operators were aware of these regulations but since they have never been enforced they haven't bothered to comply.

With few exceptions, safety provisions are inadequate. There are doubts as to whether any of the installations would fully comply with state safety regulations.

Location and specific problems are noted on each inspection summary and checklist.

/s/ R. W. Swain
R. W. Swain

RWS:tj

Attachments

cc: Agricultural Chemical Business Center - Mr. J. E. Anderson
Operations - Distribution Facilities & Services - Mr. J. W. Bodenheimer
Chemical Products - Agribusiness Product Sales - IN&M - Mr. W. H. Haverland
Engineering - Products - Mechanical Equipment - Mr. M. A. Hymel
Plans & Analysis - Manager - Chemical – Mr. E. G. Johnson

[Trial Exhibit 1119]

[Logo omitted]

D-D® Soil Fumigant
Handling and Safety
Manual

* * *

[Logo omitted]

SHELL CHEMICAL COMPANY
A DIVISION OF SHELL OIL COMPANY
P.O. Box 3871
One Shell Plaza
Houston, Texas 77001

August 4, 1978

Gentlemen:

Handling and storage of pesticides have always called for the utmost in care and consideration. The enactment of numerous laws and regulations, not only from the EPA, but also from OSHA, DOT and state and local governments, has made this task increasingly complex for all of us. We have always been concerned that our products are used only in accordance with proper instructions and regulations. The attached "D-D(R) Soil Fumigant Handling and Safety Manual" is our best effort to tie many of the regulations and safety considerations together and give you our interpretation of what they mean. Of course, you will

also want to review these regulations and make your own interpretations of such matters.

You will notice that we have included a special section on California Regulatory Requirements because we think they are especially noteworthy and may be adopted by other states. Read this manual carefully, make it available to your employees, customers, and farmer/applicators, and enact the recommendations at your storage points. Shell is willing to assist you technically and financially in accomplishing this.

While this manual represents our best information to date, things are constantly changing. If you have specific questions not fully explained in this manual, I encourage you to contact your nearest Shell Agricultural Chemical District Office as shown in the introduction. We feel that the safe handling of our products is a responsibility of good citizenship and can go a long way in preventing criticism from the opponents of agricultural chemical tools.

Sincerely,

/s/ J. H. Hawke
J. H. Hawke
Product Sales Manager
Agribusiness Sales

* * *

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D-D® SOIL FUMIGANT HANDLING AND SAFETY MANUAL

INDEX

Section I Safety Guide

- A. Product Information
- B. Safety Precautions/Safe Handling
- C. Emergency Procedures
- D. Poisoning Symptoms/Medical

Section II Transportation and Storage

- A. Transport/Carrier Information
- B. Bulk Storage and Handling
- C. Drum Storage and Handling
- D. Field Transfers
- E. Tank Cleaning

Section III Regulations

- A. D.O.T.
- B. E.P.A./F.I.F.R.A.
- C. O.S.H.A.
- D. California Regulatory Requirements

Section IV End Use Label

* * *

JA-514

SECTION I

SAFETY GUIDE

D-D® Soil Fumigant is a hazardous material that requires special precautions in all phases of its handling. Section I details the necessary precautions, provides basic product information and Shell's latest information on how to work safely with D-D. Additionally, information is provided on how to handle emergency situations and accidental human exposure.

CONTENTS

A. Product Information Includes Basic Data Sheet and Material Safety Data Sheet.

B. Safety Precautions Includes Precautionary Information on personal exposure, materials, storage, fire, and general handling precautions.

C. Emergency Procedures Includes emergency telephone number, and procedures on handling leakers, fires, wrecks, cleanup and decontamination, and recommended personal protection devices.

D. Poisoning Symptoms/Medical—Information is provided on poisoning symptoms and first aid. Physician and medical information is included.

* * *

JA-515

D-D®

SAFETY PRECAUTIONS

While safety is primarily the responsibility of each individual trained to work with D-D®, certified applicators and everyone in a supervisory capacity should be especially familiar with the safety recommendations for this fumigant and must always be alert to correct any deviations from safe procedures.

PERSONAL HYGIENE

The following precautions should be observed by individuals working with D-D:

Read, understand and observe the warning statements on all product labels. Preplan your operations to avoid exposure.

Maintain good personal hygiene. After handling or applying D-D, always wash the hands, arms and face thoroughly with soap and water. Also do this before smoking, chewing gum, eating, etc.

AVOID CONTACT WITH D-D

Eyes Wear eye protection such as chemical worker's goggles to prevent eye contact when handling D-D. If D-D gets into the eyes, flush them immediately with running water for a minimum of 15 minutes, and SEE A PHYSICIAN PROMPTLY.

Skin—When handling or working with D-D, wear clean body clothing including polyethylene or neoprene gloves and heavy polyethylene, rubber or neoprene footwear. Never wear clothing or footwear having the odor of D-D. Wash all protective clothing with soap and water after each use.

NOTE: Leather shoes should not be used without protective covering such as neoprene boots, as leather cannot be decontaminated. Destroy footwear and other leather articles contaminated with D-D.

If clothing becomes contaminated with D-D, or if D-D comes in contact with the skin, stop work immediately, remove contaminated clothing, and thoroughly wash exposed skin areas with water, or soap and water if available. Wash all contaminated clothing thoroughly before reuse. Destroy leather goods.

NOTE: Contaminated clothing may be a fire hazard until cleaned or completely dry.

DO NOT SWALLOW ANY D-D

Never put D-D into the mouth. Do not use the mouth to siphon liquids from containers or to blow out clogged lines, nozzles, etc.

DO NOT BREATHE THE VAPOR

NIOSH approved respiratory protection should be worn when D-D liquid soil fumigant is exposed to the atmosphere or when conducting operations which vent to the atmosphere, (i.e., other than closed systems. Note: Observe all state and local regulations regarding closed system requirements). These situations include loading and unloading tank cars, tank trucks, and marine vessels; filling drums and other similar containers; when exposed to small spills and cleaning up small spills or cleaning equipment. During normal field application of D-D, respiratory protection should be worn when calibrating and during filling operations but is not required when chisels are in the ground and

the equipment is sealing chisel channels.

NOTE: Excessive airborne levels of D-D may develop inside the enclosed cab of an application rig unless an uncontaminated air supply is provided.

All devices for respiratory protection have limitations on the range of compounds against which they are effective, the length of time they can be relied upon for protection, and the conditions under which they can be used and stored. Therefore, all such equipment should be used in strict accordance with its manufacturer's directions.

Selection of the proper type of respirator for protection against D-D should be based on the airborne levels of D-D encountered. Consult the D-D label in Section IV under "Precautionary Statements" for information on requirements.

Airborne Concentration	Respirator
Up to 10 ppm	Chemical cartridge respirator with organic vapor cartridge or pesticide respirator.
Up to 50 ppm	Full face cartridge respirator with organic vapor or pesticide cartridges or organic vapor or pesticide gas mask.
Up to 1,000 ppm	Type C supplied air respirator in positive pressure or continuous flow mode.
Major spill, fire fighting, confined	Self-contained breathing apparatus in pressure-demand

space entry	mode or Combination supplied air-respirator in pressure-demand mode with an auxiliary self-contained egress bottle.

All respirators should be NIOSH approved. Consult a safety equipment supplier or manufacturer for approved equipment.

NOTE: OSHA standards contain detailed requirements for respirator use, including: selection and fit; written operating instructions; training for users; inspection and maintenance of equipment; and medical criteria for users. See Section III C for further information.

NOTE: Before wearing respirator for the first time, have your supervisor explain how it is used and how to wear it correctly. Follow all OSHA rules and regulations regarding respiratory protection.

1. Make sure all parts are present and in good working order and that valves, and cartridges are properly positioned and sealed.

2. Fit respirator on face with headbands snug enough to ensure a tight but comfortable seal. For a half-mask respirator, top headbands must be above the ears and the lower bands snug for a good seal. If the operator has corrective glasses or a beard, care should be taken to insure that they do not affect the seal of the facepiece. Corrective lens kits are available for use in full face mask respirators. Proper

selection of equipment will minimize or avoid this problem. It is also important to know that no single brand or style of respirator will fit all individuals.

3. Test for leakage by placing the hand over the breathing hose or cartridge inlet(s) and inhaling gently. If facepiece is pulled toward your face, the fit is good. If not, readjust headbands and test again.

4. It is recommended that canisters and cartridges be replaced after eight hours of use or sooner if recommended by manufacturer or if D-D odor is detected inside the mask.

5. Remove used canisters and cartridges and destroy. Respirators shall be regularly cleaned as per OSHA regulations. Wash the facepiece with soap and warm water after each use. After washing, rinse thoroughly to remove all traces of soap. Place the facepiece in a well-ventilated clean area to dry.

6. Store the respirator and canisters or cartridges in a clean, dry place, preferably in a tightly closed paper or plastic bag. Replace worn or faulty parts immediately.

7. Do not do any job that requires a respirator if you have a medical or physical condition that prevents you from properly wearing or using a respirator to perform the job safely. Consult with your supervisor. OSHA standards prohibit wearing contact lenses in an atmosphere where a respirator is required.

WARNING: Never use a cartridge respirator, gas

mask, or airline respirator without carefully assessing exposure conditions. Do not use in any atmosphere where you could not safely escape if the respirator failed. The atmosphere must contain adequate oxygen (at least 19.5%). If in doubt, use a self-contained breathing apparatus. Because of the possibility of inadequate oxygen, CARTRIDGE OR CANISTER RESPIRATORS SHOULD NOT BE USED FOR FIRE FIGHTING; USE SELF-CONTAINED BREATHING APPARATUS.

ENVIRONMENTAL SANITATION

Read the product label carefully, and comply with all the use precautions and warning statements on the label.

Keep all persons whose presence is not required away from areas where D-D is being stored or loaded, or areas being treated or very recently treated with D-D.

Minimize contamination of all working-areas, including the sites of mixing or loading operations and the floors of railroad cars and trucks which may become contaminated. It is recommended that plant floors be washed with a detergent solution routinely as a part of regular plant maintenance.

Areas and equipment where spillage or leakage has occurred must be cleaned and decontaminated as soon as possible. Decontamination should be done only by properly protected and knowledgeable people. Absorb any large excess of D-D with clay or other

noncombustible absorbent material. Collect and bury material; decontaminate by washing with a strong detergent solution; flush with plenty of water. Follow the local, State, and Federal regulations for disposal of washings and soiled materials. **Do not flush to public sewers or water courses.** NOTE: Contaminated materials may be a fire hazard as D-D is flammable.

If kerosene or fuel oil is used in flushing plant or equipment, the flushings must be disposed of in a way that will not jeopardize fish, wildlife, wells or other potable water supplies. Follow local, State, and Federal regulations.

Do not leave contaminated areas, equipment, or containers unguarded.

VENTILATION

All trnsferring or repackaging of D-D should be done in an easily cleaned, well-ventilated area with explosion proof equipment, preferably well separated from other operations.

The formulating or repackaging area in a plant should be equipped with an adequate local exhaust ventilating system. Contact Shell Chemical Company for information.

EQUIPMENT

Hazardous decomposition may occur with release of hydrogen chloride when D-D comes into contact with aluminum and its alloys. Some slow decomposition has been observed with the use of zinc, magnesium and cadmium. Avoid their use.

After using, thoroughly wash all equipment with kerosene or fuel oil. This is to help prevent corrosion

as well as to eliminate a contact hazard. Follow local, State and Federal regulations when disposing of washings.

CONTAINERS AND STORAGE

Do not reuse D-D containers. Empty used disposable shipping containers as completely as possible. Rinse thoroughly with water, drain completely, and aerate until no odor is detected. Do not puncture drum to prevent reuse until all of the D-D has been removed in order to avoid possible ignition of fumigant vapors.

Dispose of empty D-D containers and washings in accordance with applicable local, State, and Federal regulations covering disposal of pesticides and containers.

Place unused D-D in tightly closed, properly labeled original containers and store containers in a cool place inaccessible to animals or unsuspecting humans, for example children. Do not store D-D near water sources or foodstuffs, seeds, fertilizers, or plants. **Never store D-D or any other pesticide in empty food or beverage containers.**

Do not store D-D in containers made of aluminum, magnesium or alloys of these metals.

Never weld, or apply a torch, or other source of heat to cut open drums or bulk tanks. D-D and its fumes can be flammable or explosive under these conditions. For additional information on Bulk Storage see Section II B, for Drum Storage see Section II C.

FIRE PRECAUTIONS

D-D Soil Fumigant is classified as a flammable

liquid by government regulations, and fire precautions for this class of chemicals should be observed.

Do not use, pour, spill or store D-D near heat or open flame, and do not flame-cut or weld empty D.D. drums.

SAFE HANDLING GUIDELINES

Safe handling of D-D requires a thorough knowledge of the properties of the material, adequate equipment designs and the development of work practices and procedures which control all hazardous aspects. The following guidelines are provided to help accomplish this:

Personnel Education

Workers handling D-D must be thoroughly educated as to its hazards and specific instructions established as to necessary personal protective equipment required for each particular type of job. Safety equipment should be readily available, properly maintained and the worker adequately trained in use procedures if exposure occurs, but emphasis should be on *preventing* the exposure not reacting to it.

Personal Hygiene Practices

Good practice calls for personnel to shower and change clothes daily after working with any pesticide, including D-D even if no known exposure has occurred. Shower and change facilities near the work site are recommended, if possible, to facilitate this. Such showers, of course, are in addition to emergency eye-bath and shower stations strategically located in the work area or adequate field wash facilities.

Equipment Condition and Housekeeping

Periodic inspections and preventive maintenance programs should be established to keep equipment and storage in first-class condition to prevent leaks of liquid and vapors. Drums must be new. Other containers used to handle D-D should be new or in excellent condition. Leaks or spills that may occur should be cleaned up immediately and properly disposed of to minimize prolonged exposure hazards from product contact and air contamination.

Equipment Design

Basic equipment design should be approached considering product properties (toxicity, flammability, corrosivity, etc.) and specific operating conditions (temperature, pressure, volume, etc.). See Section II B for storage equipment recommendations.

Maintenance Procedures

Craftsmen who work on D-D equipment must be knowledgeable of product hazards, use of safety equipment and emergency procedures. Required safety equipment should be specified for each job and used until equipment and work area have been adequately cleared. Since D-D is flammable, no spark producing, flame cutting, or welding operations should be done on equipment or in areas around equipment until proper isolation, clearing and testing with an approved combustible gas meter has established that safe conditions exist. Vessel entry by personnel should be avoided. If entry must be made, it should only be done under strict procedures established and supervised by knowledgeable personnel experienced in this type of operation.

Emergency Planning

No matter how comprehensive the design of a facility, the training of personnel and the design of operating procedures, careful consideration must be given to emergencies. Plans should be made for both minor and major emergencies and cover such situations as injuries, personnel exposures, spills, vapor releases, fires and the like. Emergency procedures should be committed to written form and regularly reviewed with workers to assure their familiarity if an emergency arises.

Section : B

D-D® SOIL FUMIGANT SAFETY PRECAUTIONS

The safety precautions that follow must be observed to protect humans and the environment. While safety is primarily the responsibility of each individual working with D-D, everyone in a supervisory capacity should be especially familiar with the safety recommendations for this fumigant and should always be alert to correct any deviations from safe practice.

PERSONAL PRECAUTIONS

The following precautions should be observed by all individuals working with D-D in an open system:

General

1. Read (and heed!) all precautionary statements on the label before use.
2. Never work alone.
3. Preplan your operations to avoid exposure. Take recommended precautions and wear the appropriate protective equipment to avoid contact with and inhalation of D-D.
4. If you feel sick when working with D-D, stop work and get medical attention.

Avoid Contact with D-D

1. D-D vapor is irritating to the eyes. D-D liquid can be severely irritating. Wear eye protection, such as chemical worker's goggles, to protect the eyes. If D-D gets into the eyes, immediately flush them with running water for

15 minutes. Get medical attention.

2. D-D is irritating to the skin (the liquid can be severely irritating). D-D is absorbed through the skin. When handling or working with D-D, wear clean body covering, including polyethylene, neoprene, or milled nitrile gloves. Replace gloves frequently and discard them to prevent reuse. Plastic- or PVC-coated knitted gloves with 12-inch cuffs offer good protection. Also wear heavy (greater than 3 mil thickness) polyethylene, neoprene, or rubber footwear. Never wear clothing or shoes contaminated with or having the garlic-like odor of D-D. Wash all protective clothing with soap and water after use.

NOTE: Leather shoes should not be worn without the above protective clothing because leather cannot be adequately decontaminated. Destroy footwear and other leather articles contaminated with D-D.

3. If clothing becomes heavily contaminated with D-D, or if D-D comes in contact with the skin, stop work immediately, remove contaminated clothing and flush exposed areas thoroughly with plenty of water. Then wash skin with soap and water. Get medical attention. Wash contaminated clothing thoroughly before reuse.

Do Not Swallow Any D-D

1. Always wash hands and face with soap and water before eating, drinking or smoking. Do not eat or smoke while working with D-D.

2. Never put D-D into the mouth. Do not use the

mouth to siphon liquids from containers or blow out clogged lines, nozzles, etc.

Do Not Inhale D-D

1. D-D is volatile and is irritating to the respiratory tract. NIOSH-approved respiratory protection should be worn any time liquid D-D is exposed to the atmosphere or when conducting transferring operations which vent to the atmosphere. These situations include loading and unloading tank cars, tank trucks and marine vessels, in cleaning up accidental spills, or in cleaning equipment. (See Respiratory Protective Devices Section, page .)

2. Agricultural tractor drivers should wear approved respiratory protection during application, calibration, and filling operations. In addition, those who operate within a closed cab of an application rig should be provided with an uncontaminated air supply because excessive airborne levels of D-D may be encountered.

3. For further respiratory information, refer to the following sections of this manual:

   A. Section I C, see Respiratory Protective Devices.
   B. D-D label. Section IV, see Precautionary Statements.
   C. OSHA regulations, Section III C.

4. Remember that the use of respirators does not lessen the importance of carefully heeding all other precautions recommended for the safe

handling of pesticides, including D-D.

Precautions in Applying D-D

In addition to the preceding general precautions to be observed by all those who handle D-D, applicators (and helpers) should heed the following:

1. Follow all applicable state and federal regulations concerning agricultural nematode control operations. Comply with any state laws requiring the use of closed transferring systems with D-D.
2. Apply D-D only in accordance with label recommendations. Note especially the application rates and pre-planting intervals specified.
3. Be sure that all persons involved are advised of the flammability and moderate toxicity of D-D, and precautions to be observed as printed on the label.
4. Wear protective clothing and an approved respirator as described in the preceding sections. Wear goggles or a full-face respirator to protect the eyes.
5. Keep D-D out streams, lakes, and ponds. Do not contaminate water bodies by the cleaning of equipment or disposal of wastes.
6. Rinse and dispose of emptied D-D containers as described in the section Pesticide and Container Storage and Disposal, page .

ENVIRONMENTAL PRECAUTIONS

In addition to practicing good personal hygiene, D-

D users should maintain a clean environment for others by observing the following precautions.

General

1. Keep children and other unauthorized persons away from:

   A. Working areas where D-D is being loaded or applied.

   B. Areas in which D-D is stored.

   C. Areas where D-D has been spilled.

2. Package D-D in an easily cleaned, well-ventilated area, preferably well-separated from other operations.

3. Prevent, minimize, or eliminate contamination of all working areas, including the sites of loading operations and the floors of railroad cars and trucks. It is recommended that plant floors be cleaned routinely as a part of regular plant maintenance.

   Areas and equipment subjected to spillage or leakage must be promptly cleaned up and decontaminated. Absorb any large excess with clay or other absorbent material. Refer to Cleanup and Decontamination, Section I C, for further instructions.

   After use, always empty and clean equipment thoroughly with kerosene or fuel oil. Avoid using water in equipment. Waste solution must be disposed of at a hazardous waste disposal site. Keep D-D and rinsates out of sanitary and storm sewers.

Pesticide and Container Storage and Disposal (Drums)

1. Store D-D in a dry, locked area, well away from sunlight, water, feed, or foodstuffs and inaccessible to animals or unsuspecting humans--for example, children. Keep away from neat and open flame. Never weld or apply a torch to containers; see Fire Precautions section, page .

2. Keep any leftover or unused D-D tightly sealed in original container and store it like the unopened product (see item No. 1).

NEVER PUT OR STORE PESTICIDES IN EMPTY FOOD OR BEVERAGE CONTAINERS. Tragic poisonings can result from this unsafe practice.

3. Rinse and drain emptied D-D drums at the point of use as follows, taking precautions to avoid contact with the pesticide.

A. Fill the drum with 11 gallons (1/5 of container volume) of kerosene. Replace the closure and agitate. Drain rinsate from container. Allow 30 seconds for drainage after normal emptying.

B. Rinse at least two more times with a detergent solution. Fill, agitate, and drain as in (A) above.

C. If kerosene is not available for the first rinse, use a strong detergent solution for all three rinses.

D. See No. 7 for instructions on disposal of rinsates.

4. For storage, cleaning and disposal procedures that pertain to tanks containing D-D in bulk, refer to Sections II B and II [illegible]

5. Dispose of emptied containers in accordance with local, state, and federal regulations governing container disposal, preferably at a waste disposal site (landfill) approved for such use.

6. DO NOT ABANDON EMPTY D-D CONTAINERS. If they cannot be disposed of immediately, collect the empty containers and store them in a locked, sign-posted enclosure.

7. Soil Fumigant or rinsate that cannot be used should be disposed of in accordance with local, state, and federal regulations, or at a hazardous waste disposal site approved for D-D (dichloropropenes/ dichloropropanes).

Equipment

1. Hazardous decomposition may occur with release of hydrogen chloride gas when D-D comes in contact with aluminum and its alloys. Some slow decomposition has been observed with the use of zinc, magnesium, and cadmium. AVOID THEIR USE.

2. D-D cannot be processed or applied safely with substandard or faulty equipment. All processing, packaging, and application equipment must be kept in good operating condition and free from leaks at seams, nozzles, couplings, packing glands, valves, points of closure, hose connections, shut-offs, etc.

3. After use, thoroughly clean and decontaminate equipment to eliminate any hazard to humans and animals from residual soil fumigant. (Refer to Cleanup and Decontamination section, page .)

Ventilation

The manufacturing or packaging area in a plant should be equipped with a properly designed local exhaust ventilation system that will adequately control all sources of vapor to below the recommended exposure limit (see below). The ventilating system must remove the contaminated air from the workplace and must not create a hazard in the surrounding area. A general room ventilating system (dilution ventilation) by itself would not meet proper control requirements.

OCCUPATIONAL EXPOSURE LIMITS

No permissible exposure limit (PEL: Occupational Safety and Health Administration) or 1980 threshold limit value (TLV: American Conference of Governmental Industrial Hygienists) has been established for occupational exposure to D-D. However, Shell has an 8-hour time weighted average (TWA) internal standard of 1 part per million (ppm) for D-D exposure. Peaks of [illegible] ppm are permissible for a maximum of 15 minutes

FIRE PRECAUTIONS

D-D is classified as a flammable liquid by government regulations. Safety precautions pertaining to flammable liquids should be observed.

Do not use, pour or store D-D near heat and open flame. Never flame cut or weld empty D-D drums.

SAFE HANDLING GUIDELINES

Safe handling of D-D requires a thorough knowledge of the properties of the material, adequate equipment designs, and the development of work practices and procedures which control all hazardous aspects. The following guidelines are provided to help accomplish this:

Personnel Education

Workers handling D-D must be thoroughly educated as to its hazards and specific instructions established as to necessary personal protective equipment required for each particular type of job. Safety equipment should be readily available, properly maintained, and the worker adequately trained in use procedures if exposure occurs, but emphasis should be on preventing the exposure - not reacting to it.

Personal Hygiene Practices

Good practice calls for personnel to shower and change clothes daily after working with any pesticide, including D-D, even if no exposure has occurred. Shower and change facilities near the work site are recommended, if possible, to facilitate this. Such showers, of course, are in addition to emergency eye-bath and shower stations strategically located in the work area.

Equipment Condition and Housekeeping

Periodic inspections and preventive maintenance programs should be established to keep equipment and storage in first-class condition to prevent leaks of liquid

and vapors. Drums must be new. Other containers used to handle D-D should be new or in excellent condition. Leaks or spills that may occur should be cleaned up immediately and properly disposed of to minimize prolonged exposure hazards from product contact and air contamination.

Equipment Design

Basic equipment design should be approached considering product properties (toxicity, flammability, corrosivity, etc.) and specific operating conditions (temperature, pressure, volume, etc.). See Section II B for storage equipment recommendations.

Maintenance Procedures

Craftsmen who work on D-D equipment must be knowledgeable of product hazards, use of safety equipment, and emergency procedures. Required safety equipment should be specified for each job and used until equipment and work area have been adequately cleared. Since D-D is flammable, no spark-producing, flame-cutting, or welding operations should be done on equipment or in areas around equipment until proper isolation, clearing, and testing with an approved combustible gas meter has established that safe conditions exist. Vessel entry by personnel should be avoided. If entry must be made, it should only be done under strict procedures established and supervised by knowledgeable personnel experienced in this type of operation.

Emergency Planning

No matter how comprehensive the design of a facility, the training of personnel, and the design of operating procedures, careful consideration must be given to

emergencies. Plans should be made for both minor and major emergencies and cover such situations as injuries, personnel exposure, spills, vapor releases, fires, etc. Emergency procedures should be committed to written form and regularly reviewed with workers to assure their familiarity if an emergency arises.

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D-D® SOIL FUMIGANT

EMERGENCY PROCEDURES

The procedures that follow are intended primarily for immediate, temporary control of emergencies involving D-D® Soil Fumigant. In all such cases, contact Shell Chemical Company by calling the following telephone number:

(618) 254-7331

You will be put in touch with Shell Chemical staff personnel who will provide advice and arrange for professional help as needed to cope with the emergency.

LEAKING CONTAINERS

Despite the best of packaging, there is always a possibility that a pail or drum of D-D may be damaged in handling or shipping. As D-D is frequently transported in bulk trucks or rail cars, accidents involving these vehicles could result in leakage of large quantities of D-D.

Upon discovery of a leaking container (leaker), do the following:

1. Isolate the area, and keep people away. Allow no smoking in the vicinity. Keep open flames or any other source of ignition out of the area.
2. If the leaker is indoors, evacuate and ventilate the area thoroughly to minimize fumes.
3. If anyone has been adversely affected by the leaked D-D, call a physician, and render first aid.
4 Invert or reposition the leaking container of D-D if

it can be done safely. Wear adequate respiratory protection to prevent inhalation of D-D vapor, and use necessary recommended impervious protective clothing to prevent skin contact.

5. Cover or confine the leak with a material such as diatomaceous earth, clay, sand, or other noncombustible material.

6. Contact Shell Chemical Company by calling the following telephone number:

   (618) 254-7331

   You will be put in touch with Shell Chemical staff personnel who will advise further steps to take and assist in arranging for professional help or assistance as needed.

FIRE

In any fire involving D-D, the following general rules apply:

1. Notify the fire department immediately. Identify D-D as well as other pesticides and other hazardous substances that might be involved.

2. Clear out all personnel to a safe distance, upwind from the smoke and fumes.

3. Fire fighters should wear full turn-out self-contained breathing apparatus for protection against both toxic fumes which may be generated and oxygen-deficient atmospheres. CAUTION: Respirators and gas mask canisters commonly used for protection against pesticides offer no protection against oxygen deficiency, and should not be used in fire fighting.

4. Use the same techniques and equipment to combat a D-D fire (water spray, CO_2, or dry chemical) which are appropriate for flammable liquids.
5. Keep pesticide containers cool, if possible, with a water spray. However, use only as much water as necessary because excess water compounds the problems of decontamination and cleanup.
6. Dike or trench around the area or otherwise keep contaminated water from reaching streams, water supplies and sanitary or storm sewers.
7. Contact Shell Chemical Company by calling the following telephone number:

   (618) 254-7331.

   You will be put in touch with Shell Chemical staff personnel who will provide advice and arrange for professional help or assistance as needed.

TRANSPORTATION EMERGENCIES

Vehicle wrecks or other transportation emergencies involving pesticides constitute special hazards because they usually occur where equipment and facilities for cleanup are not readily available and are usually on public highways. In the case of D-D, which is commonly transported in bulk, a wreck may involve spillage of a large amount of D-D, increasing the risk of hazardous exposure to the fumes or liquid.

In case of a vehicle wreck in which D-D (or any other Shell pesticide) is involved, these procedures are recommended:

1. Notify local police and fire departments and/or emergency crews (as well as the carrier).

2. Isolate the affected area or vehicle and keep people upwind and away. Only personnel with proper respiratory protective equipment and suitable protective clothing should be allowed into the area. Allow no smoking, open flames or other sources of ignition in the vicinity. **This includes flares.**

3. Get medical help for anyone adversely affected by the spilled pesticide. Render first aid until the victim is under the care of a physician or hospital.

4. Make every effort to keep pesticide spills or leaks from spreading, but in doing so, take great care to avoid contact with the pesticide.

NOTE: Quick action may be necessary to limit spread.

A. **If there is a spill or leak in the vehicle.** If the vehicle can be moved without spreading the contamination, move it to an area equipped with a pesticide sump and water supply. If moving the vehicle would create a hazard, on-the-spot cleanup and decontamination will have to be carried out. (see below)

CAUTION: Be very careful in assessing the extent of damage in any vehicle carrying pesticides. **If explosive concentrations of the vapors are detected, do not start vehicle engine.**

B. **If pesticide has spilled onto the roadway or ground.** Confine the spill as much as possible with a dike or dam of any available non-combustible material such as soil, clay, sand, etc. Avoid inhalation of vapor, or contact with liquid.

C. **If spilled pesticides reach or threaten to reach a stream or other body of water or water supply.** Notify local health department authorities, the

EPA and/or the Coast Guard immediately. Use dams, ditches or other means to stop flow until decontamination can be carried out.

5. Notify Shell Chemical Company by calling the following telephone number:

(618) 254-7331

You will be put in touch with Shell Chemical staff personnel who will advise regarding further steps to be taken, and arrange for professional help with cleanup and decontamination, if needed.

CLEANUP AND DECONTAMINATION

The instructions that follow are provided for the guidance of response teams and other emergency personnel who are involved with cleaning up D-D spills and decontaminating equipment and premises. For assistance, call the following telephone number to contact Shell Chemical Company staff personnel.

(618) 254-7331

If you do undertake to clean up and decontaminate after a D-D spill, be sure that you know what the hazards are, and that you are properly equipped to do the job safely.

Personal Safety

1. Do not work alone.
2. Wear suitable protective clothing bearing in mind that D-D is hazardous by skin or eye contact, and by inhalation of the vapor. Use a NIOSH/MESA-approved respirator or gas mask when D-D is exposed to the atmosphere. A cap and clean coveralls, or liquid-proof outer clothing should be

worn, along with polyethylene or heavy neoprene gloves and rubber boots. Do not wear street clothes under workclothes. Bathe or shower after work, and change to clean clothing, including fresh underwear. Do not wear clothing contaminated with D-D until it has been thoroughly cleaned or laundered.

NOTE: **Leather shoes should not be worn** as they cannot be decontaminated. **Destroy leather shoes** and other leather articles which become wet with D-D. For further information on personal safety, See Section II B.

Recovery and Salvage

1. Remove undamaged containers that show no evidence of the effects of spillage, and isolate for later cleanup any containers contaminated by the leaker.

2. Transfer remaining D-D from leaking containers to clean containers of the same type by gravity flow or siphon. Use a winch or forklift to raise drums, as necessary.

CAUTION: Do not start siphon by mouth. D-D is flammable; do not cause sparks. If leakage from bulk container such as a tank truck is involved, it is sometimes possible to recover product by transferring it to another tank with a pump.

Cleanup of Spill Area

1. Spread a generous amount of a non-combustible material on the spilled D-D, such as diatomaceous earth, clay or soil. Collect the spent material in a DISPOSAL drum. Repeat as needed to collect all liquid.

2. If the spill is on the ground, dig up enough of the surface to eliminate the contamination placing it in a DISPOSAL drum.

3. Wash equipment and surfaces with a detergent solution, and rinse with water. Collect the washings as described above.

4. For porous surfaces such as wood, this treatment is not effective and the wood should be torn out and replaced. Spills on asphalt surfaces will soften material making it unusable, therefore, removal of localized area will be necessary, practical and desirable. In the case of concrete, dense surfaces can be washed down with a strong detergent solution and rinsed with water. If the concrete is porous, removal will be more a judgmental factor. Surfaces on which food or related products will be stored or processed will mandate removal as will a playground surface. The quantity spilled, location and how quickly cleanup is started are also factors in determining whether the surface should be replaced.

A suitable drum for disposal of contaminated materials can be purchased from most drum suppliers against the following description: Standard 18-gauge, 55-gal. steel drum with bolted ring, full removal head with 2" and 3/4" flange openings and foam rubber gasket undercover. It is suggested that warehouses stock several of these drums and clearly mark them as DISPOSAL for insecticides. (Two of these drums are included in the Decontamination Kit maintained at warehouses where Shell pesticides are stored.)

Cleanup of Intact Containers

1. Wash the outside of contaminated, intact containers with detergent solution. Use a wire brush to remove loosened paint. Collect washings and rinse water in a DISPOSAL drum.
2. If the container finish or the label is damaged, it will be necessary to touch up the paint or relabel the container, or to repackage the product.

Decontamination and Disposal of Empty Containers

1. Rinse empty containers several times with detergent solution, collecting the rinses. Rinse until vapors are no longer present. After the final rinse, puncture the containers on top near the rim to assure complete drainage, if necessary.
2. Puncture or crush decontaminated containers to prevent reuse, and dispose of the remains in accordance with applicable local, state and federal regulations covering pesticide and container disposal. Burial in a solid waste disposal site (landfill) approved for this use is suggested.

WARNING: Do not apply a cutting or welding torch or electrode to empty D-D containers. Residual vapors may be explosive.

Disposal of Wastes

1. If the waste material in the DISPOSAL drum cannot be disposed of locally, for example in an approved landfill. Call the nearest Shell Agricultural Chemical District Office (as listed in the Introduction) for further guidance.

Disposition of Recovered Product

1. Call the nearest Shell Agricultural Chemical District Office for instructions regarding disposition of the recovered D-D.

RESPIRATORY DEVICES FOR PROTECTION AGAINST INHALATION HAZARDS

General

All devices for respiratory protection have limitations on the range of compounds against which they are effective, the length of time they can be relied upon for protection and the conditions under which they can be used and stored. Therefore, all such equipment should be used in strict accordance with its manufacturer's directions.

When a respirator or gas mask is used:

1. The mask must fit snugly on the face, with no leakage.
2. Cartridges or canisters and filters must be replaced within the period specified by the manufacturer, and more frequently if there is any indication of loss of effectiveness.
3. Facepieces should be washed frequently with soap and water (after removing filters and cartridges or canisters), and all parts stored in a clean, dry, dustproof place.
4. Self-contained breathing apparatus, airline supplied respirators, or full-face gas masks should be worn when working in contact with pesticide dusts or vapors in closed or inadequately ventilated spaces.

WARNING: Never use a cartridge or canister-type gas mask without carefully assessing exposure conditions. The atmosphere must contain adequate oxygen (at least 19.5%), and contaminant levels must not exceed the effective capacity of the respirator. Use a self-contained breathing apparatus whenever D-D vapor concentration exceeds 1,000 ppm or there may be inadequate oxygen. FULL FACE MASKS SHOULD NOT BE USED FOR FIRE FIGHTING; USE SELF-CONTAINED BREATHING APPARATUS.

NOTE: For additional information on respiratory protection, see Section III C for OSHA Respirator Standards.

Section : C

D-D® SOIL FUMIGANT EMERGENCY PROCEDURES

The instructions that follow are for immediate and temporary control of emergencies such as fire, leaking containers, vehicle wrecks and other accidents involving D-D.

In case emergency assistance is required, contact Shell Chemical Company by calling one of the following 24-hour telephone numbers:

(713) 473-9461
or (Shell)
(618) 254-7331

(800) 424-9300 (CHEMTREC)

You will be put in contact with Shell Chemical staff who will provide advice or arrange for on-site assistance as needed.

LEAKING CONTAINERS

Despite the best of packaging, there is always a possibility that containers may leak because of accidental damage sustained during handling or shipping. Because D-D is volatile, flammable, moderately toxic to warm-blooded animals, and often transported in bulk, a leaking container can present a special hazard when it occurs in a place where the usual manufacturing plant facilities for cleanup and decontamination do not exist.

Upon Discovery of a Leaking Container, Do the Following:

1. Immediately isolate the affected area and keep out

unauthorized personnel. Avoid exposure. D-D presents a fire hazard. Eliminate ignition sources, including sparks, torches, flares, and open flame. Do not allow smoking in the area.

2. If anyone has been affected by leaking D-D, remove the person from continued exposure. Call a physician or poison control center immediately and give first aid. (See Section : D). Move the patient promptly to a hospital if so directed.

3. If the leaker is indoors, ventilate the area as thoroughly as possible.

4. If possible, stop the leak. See Cleanup and Decontamination in this section for further instructions. However, cleanup of spilled or leaked D-D should be handled by trained and properly equipped pesticide decontamination personnel. By calling one of the emergency numbers given at the beginning of this section, you will be put in touch with Shell Chemical staff who can provide advice or on-site technical expertise if required.

FIRE

D-D is a flammable liquid. DANGER: When exposed to excessive heat from a fire, containers may rupture violently, releasing toxic and noxious vapors which would be injurious by inhalation or by skin contact. Adjacent D-D containers should be kept cool, if possible, by use of water spray.

General Procedures in Case of Fire

1. Call the Fire Department. Indicate the types of pesticides that may be involved. Since the fire officials may require additional information, provide them with the emergency numbers given

at the beginning of this section.

2. Clear all personnel from the vicinity to a safe distance, upwind from smoke and fumes. Isolate the area.

3. All personnel fighting the fire should wear liquid-proof protective clothing (including body covering, hat, rubber gloves, and rubber boots) to prevent accidental contact with D-D. Contaminated clothing will require laundering before reuse. Grossly contaminated articles should be disposed of in a safe manner, as should any contaminated leather items (including shoes).

4. Fire fighters should use a pressure-demand self-contained breathing apparatus for protections against both toxic and oxygen-deficient atmospheres.

   CAUTION: Because of the danger of oxygen deficiency, respirators with canisters or cartridges should not be used when fighting fires. No protection against oxygen deficiency is provided by canisters or cartridges.

5. Confine and isolate the fire and the resulting contamination as much as possible. Trench around the area or otherwise block drainage, including fire-fighting runoff, that could contaminate sewer streams, or other water supplies.

6. Notify Shell Chemical Company. By calling one of the emergency numbers given at the beginning of this section, you will be put in touch with the Shell Chemical staff who can provide advice and on-site technical expertise as needed.

7. Cleanup after a pesticide fire is hazardous and

should be done by trained and properly equipped decontamination personnel. Those engaged in cleanup should be aware of special hazards associated with pesticide fire damage:

A. Standing water may be heavily contaminated with pesticides, and the hazard of pesticide contact may be high. Rubber boots are essential.

B. Pesticides of several different types may be spilled and spread about during a fire. If intoxication results from an overexposure to such mixtures, diagnosis and treatment may be complicated.

C. Structural and other debris remaining after a fire may be contaminated with pesticides. Contact your regional office of the Environmental Protection Agency or your state waste management office for instructions on disposal of this material.

VEHICLE WRECKS

In any accidents involving vans, trucks, or rail cars which are carrying D-D, the following general procedures apply:

1. Alert local police and fire officials and/or emergency crews, as well as the carrier, stating the details and the nature of the cargo. If these officials require additional information, provide them with the emergency phone numbers listed at the beginning of this section. Be cautious and avoid contact with spilled D-D when assessing the extent of the damage.

2. Isolate the affected area and keep out

unauthorized personnel. Allow no smoking or flares in the vicinity of the wreckage.

3 In case of suspected D-D intoxication, immediately call a physician or poison control center and follow the instructions. Since he may require additional information, provide the physician with the Medical Emergencies phone number given at the end of this section. See the First Aid Procedures in Section I D for immediate assistance.

4. Confine any spill resulting from the wreck. In doing so, be careful to avoid contact with the nematicide. Especially, do not, allow spilled product to reach any body of water or sewer system. Quick action is important in containing the spilled material. Wear appropriate personal protective equipment (eye protection, liquid-resistant clothing, approved respirator).

   A. If there is contamination in the vehicle, isolate the vehicle and apply the procedure in the following Cleanup and Decontamination section.

   B. If there is D-D leakage on the ground or pavement, contain the contamination as much as possible by trenching or diking, but avoid exposure to the nematicide. Use earth, sand, or any available absorbent material. See Cleanup and Decontamination, below.

   C. If D-D reaches or threatens to reach a stream or water supply, notify local police or fire authorities IMMEDIATELY. If possible, dam or otherwise stop the normal flow of water until decontamination can be carried out.

NOTE: Bulk shipments of D-D which exceed 500 gallons contain a Hazardous Substance (dichloropropene-dichloropropane mixture) as defined by the Clean Water Act (40 CFR Parts 116 and 117). As regulated by the Department of Transportation, the National Response Center of the U.S. Coast Guard must be notified promptly in the case of a transportation-related D-D spill which is accidentally or intentionally discharged into or upon U.S. navigable waters or adjoining shorelines. The officials should be told that a reportable quantity of a dichloropropene-dichloropropane mixture is involved. This reporting is required by law if a spill from the above tank capacity enters watercourses or sewers entering/leading to surface waters.

You can reach the National Response Center by calling the following toll-free number:

(800) 424-8802

5. Notify Shell Chemical Company of the accident by calling one of the emergency numbers given at the beginning of this section. You will be put in touch with Shell Chemical staff who can provide advice and on-site technical expertise as needed.

CLEANUP AND DECONTAMINATION

Because D-D is volatile, flammable, and moderately toxic, cleanup of spills and leaks and decontamination of equipment and premises should be done by trained and properly equipped decontamination personnel. By calling one of the emergency numbers given at the beginning of this

section, you will be put in touch with Shell Chemical staff who will provide advice and on-site technical expertise as needed.

The instructions that follow are provided for the guidance of decontamination and emergency personnel who may become involved in the cleanup and decontamination of D-D spills.

DO NOT ATTEMPT TO HANDLE THE CLEANUP AND DECONTAMINATION YOURSELF UNLESS YOU KNOW WHAT THE HAZARDS ARE AND YOU ARE EQUIPPED TO DO THE JOB SAFELY.

Personal Safety

1. Do not work alone. Have someone available who can assist you directly or get help if necessary. Remember that D-D is flammable and explosive under certain conditions. See Fire Precautions section, page .

2. Wear proper protective equipment:

   ALL contact with D-D, whether liquid or vapor, must be avoided. Wear clean, liquid-resistant protective clothing, including rubber gloves and boots, as necessary. Wear eye protection and an approved respirator as required to avoid inhalation of D-D. (See Respiratory Protective Devices at the end of this section.) Do not reuse contaminated clothing until it has been laundered or cleaned. Destroy contaminated clothing that cannot decontaminated. Destroy contaminated leather articles, including shoes.

3. Wash hands and face before eating or smoking; do not eat or smoke while working with D-D. Shower after cleanup and change into clean clothing,

including fresh underwear.

Salvage and Recovery of D-D Product

1. Stop any leaks by repositioning the containers or by patching or otherwise repairing the leaks, but take care to avoid contact with the soil fumigant. Pack the damaged containers in a SALVAGE drum.* Fill the drum with compatible cushioning and absorbent material. The drum exterior must include the proper shipping name of the product, the name and address of the consignee, and be clearly marked "SALVAGE DRUM".

2. Isolate for later cleanup any intact containers that have been contaminated by the leaker. Also isolate the intact, uncontaminated containers.

3 Seal and safely store the drum of salvaged, uncontaminated product from Step 1 above. Contact Shell Chemical Company in Houston for advise concerning the disposition of the product. If it is not a an emergency, call one of the following telephone numbers during regular office hours.

(713) 241-0114

or

* "The drum utilized may be either a DOT specification or a non-DOT specification drum (greater than 55 gallons) as long as the drum has equal or greater structural integrity than a package that is authorized for the respective materials..." The drum may be used for the shipment of recoverable leakers or for the disposal of contaminated wastes. Two of these drums are included in the Decontamination Kit maintained at warehouse facilities where Shell pesticides are stored. Refer to the rules published in the Hazardous Materials regulations of the Department of Transportation, Title 49, part 173.3.

(713) 241-0115

Cleanup of D-D Spillage

1. Wear protective equipment (including approved respirator) as required to avoid exposure. Cover the spill area with a generous amount of an absorbent material, such as clay, diatomaceous earth, sand, sawdust, or sweeping compound. Sweep the contaminated absorbent onto a shovel and put the sweepings into another SALVAGE drum. Repeat as necessary to collect all liquid spillage. If leakage occurs on the soil, dig up enough of the surface to remove the contamination and place it in the SALVAGE drum.

2. Place shipping cartons and other expendable items which have soaked up or have been contaminated with D-D into the SALVAGE drum. Also put into the SALVAGE drum any empty container which has had its contents transferred or leaked.

Decontamination of Contaminated Areas and Equipment

When D-D spillage has been collected as above, proceed to decontaminate contaminated equipment and surfaces as follows:

Wash down affected areas with a detergent solution, and rinse with water. Absorb wastewater as above or drain it to a sump for future collection and disposal. (CAUTION: Do not allow waste water to enter a sanitary or storm sewer.) Scoop up contaminated absorbent and place it in the SALVAGE drum.

NOTE: For absorptive surfaces such as wood, this treatment is not effective and the wood should be

removed, discarded (e.g., SALVAGE drum), and replaced. Spills on asphalt surfaces will soften material, making it unusable; therefore, removal of the localized area will be necessary, practical, and desirable. In the case of concrete, dense surfaces can be washed and rinsed with water, as above. If the concrete is porous, removal will be more a judgmental factor.

Decontamination of Intact Containers

1. If leaking D-D spills onto other metal, glass, or plastic pesticide containers, use the procedure described in the above section to decontaminate the affected surfaces. If a container has been contaminated with only small splotches or drops, it may be better to let the D-D evaporate or wipe it off with a moist rag. If gross D-D spillage has occurred on paper or fiberboard containers, the extent of damage will determine whether the product is to be discarded or repackaged.
2. If the labels on intact containers are damaged, contact your Shell representative for new labels.

Disposal of Contaminated Materials

Contact your regional office of the Environmental Protection Agency or your state waste management office for advice regarding disposal of the waste material. If local disposal of the wastes is required, follow all applicable regulations or use an authorized hazardous waste disposal site.

[Trial Exhibit 1122]

* * *

D-D® Soil Fumigant Safety Guide [Shell logo omitted]

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[Shell footer omitted]

SAFETY GUIDE D-D® SOIL FUMIGANT

D-D® is a broad-spectrum soil fumigant for control of soil dwelling plant pathogenic nematodes. It is a mixture of chlorinated propenes and propanes, principally dichloropropene and dichloropropane. D-D is a liquid with a pungent, garlic-like odor. It is moderately volatile, and is soluble in hydrocarbons and certain other organic solvents, but only very slightly soluble in water. It is generally applied at full strength.

D-D is moderately toxic by ingestion or inhalation and is irritating to the skin. It can be safely used if safe handling procedures and precautions are followed. Use D-D only if you are willing and able to comply with all safety recommendations for this soil fumigant.

SAFETY PRECAUTIONS

While safety is primarily the responsibility of each individual working with D-D, everyone in a supervisory capacity should be especially familiar with the safety recommendations for this fumigant and should always be alert to correct any deviations from safe procedures.

PERSONAL HYGIENE

The following precautions should be observed by all individuals working with D-D in any open system:

General

1. Read (and heed) the warning statements on all product labels.
2. Never work alone.

3. Take recommended precautions and wear proper protective clothing to avoid contact and inhalation of D-D.

Avoid Contact with D-D

1. Wear goggles or face shield, or a full-face gas mask as needed, to protect the eyes. If D-D gets into the eyes, immediately flush them with running water for 10-15 minutes, and SEE A DOCTOR.
2. When handling or working with D-D, wear clean clothing, and gloves polyethylene, neoprene, or polyvinyl alcohol (PVA) gloves are recommended. Never wear clothing or shoes having the odor of D-D. Wash all protective clothing thoroughly after use.

   NOTE: Leather shoes should not be used, as they cannot be adequately decontaminated. Destroy shoes and other. leather articles contaminated with D-D.
3. If clothing becomes heavily contaminated with D-D, or if D-D comes in contact with the skin, stop work immediately, remove contaminated clothing, and thoroughly wash exposed areas with soap and water.
4. After, handling or applying D-D, always wash the hands, arms and face thoroughly with soap and water.

Do Not Swallow Any D-D

1. Always wash hands and face with soap and water before smoking or eating.
2. Never put D-D into the mouth. Do not use the mouth to siphon liquids from containers or blow out clogged lines, nozzles, etc.

Do Not Inhale D-D

1. D-D is moderately volatile and respiratory protection should be worn any time liquid D-D is exposed to the atmosphere or when conducting transferring operations which vent to the atmosphere. These situations include loading and unloading tank cars, tank trucks and marine vessels, in cleaning up accidental spills or in cleaning equipment.
2. Agricultural tractor drivers should wear proper respiratory protection during calibration and filling operations but this is not required when chisels are "down" and the equipment is sealing chisel channels.

ENVIRONMENTAL SANITATION

All users or applicators of D-D, in addition to practicing personal hygiene, are obligated to maintain a safe and clean environment for others.

LEAKING CONTAINERS

Despite the best of packaging, there is always a possibility that a pail or drum of D-D may be damaged in handling or shipping. As D-D is frequently transported in bulk trucks or rail cars, accidents involving these vehicles could result in leakage of large, quantities of D-D.

Upon Discovery of a Leaking Container (Leaker), Do The Following:

1. Isolate the area, and keep people away. Allow no smoking in the vicinity.
2. If the leaker is indoors, ventilate the area thoroughly to minimize fumes.
3. If anyone has been affected by the leaked D-D, call a physician, and render first aid.

4. Invert or reposition the leaking container of D-D *if it can be* done *safely*. Wear respiratory protection to prevent inhalation of D-D vapor, and use gloves.
5. Cover or confine the leakage with an absorbent such as diatomaceous earth, clay, sawdust, sand, or other absorptive material.
6. Contact Shell Chemical Company by calling the following telephone number:

   (618) 254-7331

   You will be put in touch with Shell Chemical staff personnel who will advise regarding further steps to take and arrange for cleanup and decontamination if needed.

FIRE

In any fire involving D-D, the following general rules apply:

1. Notify the fire department immediately. Identify the pesticides that might be involved.
2. Clear out all personnel to a safe distance, upwind from the smoke and fumes.
3. Fire fighters should wear self-contained breathing apparatus for protection against both toxic fumes and oxygen-deficient atmospheres. CAUTION: Respirators and gas mask canisters commonly used for protection against pesticides offer no protection against oxygen deficiency, and should not be used in fire fighting.
4. Use usual techniques and equipment to combat the fire (water spray, foam, etc.)
5. Keep pesticide containers cool, if possible, with a water spray. However, use only as much water as

necessary because excess water compounds the problems of contamination and cleanup.

6. Dike or trench around the area or otherwise keep contaminated water from reaching streams, water supplies, and sanitary or storm sewers.
7. Contact Shell Chemical Company by calling the following telephone number:

   (618) 254-7331

   You will be put in touch with Shell Chemical staff personnel who will provide advice and arrange for cleanup and decontamination as needed.

VEHICLE WRECKS

Vehicle wrecks involving pesticides constitute special hazards because they usually occur where equipment and facilities for cleanup are not readily available. In the case of D-D, which is commonly transported in bulk, a wreck may involve spillage of a large amount of D-D, increasing the risk of hazardous exposure to the fumes or liquid.

In case of a vehicle wreck in which D-D (or any other Shell pesticide) is involved, these procedures are recommended:

1. Notify local police and fire departments and/or emergency crews (as well as the carrier).
2. Isolate the affected area or vehicle and keep people upwind and away. Only personnel with proper respiratory equipment and suitable protective clothing should be allowed into the area. Allow no smoking in the vicinity.
3. Get medical help for anyone affected by the spilled pesticide. Render first aid until the victim is under the care of a physician or hospital.

4. Make every effort to keep pesticide spills or leaks from spreading contamination; but in doing so, take great care to avoid contact with the pesticide.

   NOTE: Quick action may be necessary to limit spread.

Cleanup of Intact Containers

1. Wash the outsides of contaminated intact containers with detergent solution. Use a wire brush to remove loosened paint. Collect washings and rinse water in a DISPOSAL drum.
2. If the container finish or the label is damaged, it will be necessary to touch up the paint or relabel the container, or to repackage the product.

Decontamination and Disposal of Empty Containers

1. Rinse empty containers several times with detergent solution, collecting the rinses. After the final rinse, puncture the containers on top near the rim to assure complete drainage if necessary.
2. Puncture or crush used containers to prevent reuse, and dispose of the remains in accordance with applicable regulations covering pesticide and container disposal. Burial in a solid waste disposal site (landfill) approved for this use is suggested.

   WARNING: Do not apply a cutting or welding torch or electrode to empty D-D containers. Residual material may cause an explosion.

Disposal of Wastes

1. If the waste material in the DISPOSAL drum cannot be disposed of locally, for example, in an approved landfill, call the Operations/Distribution Department; Shell Chemical Company, San Ramon, California, for advice regarding disposal. Refer to

the list of telephone numbers and addresses at the front of the Safety Manual.

Disposition of Recovered Product

1. Call the Operations/Distribution Department, Shell Chemical Company, San Ramon, California, for instructions regarding disposition of the recovered D-D. Refer to the list of telephone numbers and addresses at the front of the Safety Manual.

RESPIRATORY DEVICES FOR PROTECTION AGAINST INHALATION HAZARDS

General

All devices for respiratory protection have limitations on the range of compounds against which they are effective, the length of time they can be relied upon for protection, and the conditions under which they can be used and stored. Therefore, all such equipment should be used in strict accordance with its manufacturer's directions.

(See also "Respiratory Devices for Protection Against Certain Pesticides," U.S. Department of Agriculture, Agricultural Research Service Bulletin ARS-33-76, and its supplements.)

When a respirator or gas mask is used,

1. The mask must fit snugly on the face, with no leakage.
2. Cartridges or canisters and filters must be replaced within the period specified by the manufacturer, and more frequently if there is any indication of loss of effectiveness.
3. Face pieces should be washed frequently with soap and water (after removing filters and cartridges or canisters), and all parts stored in a clean, dry, dustproof place.

4. Self-contained breathing apparatus or full-face gas masks should be worn when working in contact with pesticide dusts or vapors in closed or inadequately ventilated spaces.

   WARNING: Never use a cartridge or canister type gas mask without carefully assessing exposure conditions. The atmosphere must contain adequate oxygen (at least 19.5%). Use a self-contained breathing apparatus whenever exposure exceeds 1,000 ppm or there is a doubt of adequate oxygen. GAS MASKS SHOULD NOT BE USED FOR FIRE FIGHTING: USE SELF-CONTAINED BREATHING APPARATUS.

NOISH/MESA CERTIFIED RESPIRATORY PROTECTION EQUIPMENT

1. CHEMICAL CARTRIDGE-RESPIRATORS

   (Use for exposure from 1 ppm-1,000 ppm)

   A. Respirators for respiratory protection against organic vapors.

      (1) Welsh, a Textron Co., 7501 (with 7500-1 cartridges), 7503 (with 7500-3 cartridges), 7401L (with 7500-1 cartridges), or 75BP01 (with 7500-1 cartridges).

      (2) Willson Products Div. ESB Inc., 1221 (with R21 cartridges).

      (3) American Optical Corp., R5051 (with R51 cartridges), R6051 (with R51 cartridges), R8151 (with R151 cartridges).

* * *

8. Try to determine the names of all materials (including active ingredients) with which the patient had been working or with which he has been contaminated. Take a label from the container (or a

clean, labeled container) to the hospital or physician, along with any available literature describing the products involved.

INFORMATION FOR PHYSICIANS*

INTOXICATION BY D-D

D-D is a mixture of C_3 chlorinated hydrocarbons which is moderately toxic to mammals following ingestion or inhalation. It is soluble in many organic solvents and fats, but only very slightly soluble in water. The material can be absorbed following ingestion, or inhalation, or through the intact skin. The greatest occupational hazards are skin and eye exposure to the liquid material, and inhalation of and eye exposure to the vapors.

When true intoxication develops, a definite history of exposure to the toxic substance or substances can usually be elicited.

Acute Intoxication: Symptomatology - Diagnosis

Inhalation of high vapor concentrations of D-D may cause irritation of the conjunctiva, laryngospasm and bronchospasm, pain in the chest, cough, and dyspnea. Ingestion causes acute irritation of the gastrointestinal tract with pain, vomiting and diarrhea, dyspnea, cough, and lung congestion and pulmonary edema. Skin contamination may cause irritation and chemical burn. The diagnosis is based on the symptomatology in light of a history of exposure.

* The treatment of poisoning caused by economic poisons used public health and agriculture is well summarized in the "Clinical Handbook on Economic Poisons." Public Health Service Publication No. 476 which is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

Treatment

If the material has been ingested, carry out cautious gastric lavage. Give no fats or oils, but rather administer a demulcent like alumina gel. Meperidine and atropine are indicated for control of pain and gastrointestinal spasm. In severe cases, continuous suction by naso-gastric tube should be considered. As with the ingestion of all strong local irritants, the possibility of glottic edema should be kept in mind. The administration of corticosteroids or ACTH as an aid in the prevention of esophageal stricture is recommended. Other treatment is also symptomatic and supportive, and the physician should be guided by clinical signs.

In cases of accidental inhalation, removal from contamination usually suffices. In rare cases of severe overexposure with laryngo- and bronchospasm, inhalation of a spray or aerosol of 1% epinephrine or 0.25% isoproterenol may be helpful. In addition, intravenous administration of aminophylline 250 mg should be considered, and positive pressure oxygen administration may be indicated.

In animals, hepatic and renal damage have occurred following D-D intoxication. Therefore, repeated function tests are advisable to detect and evaluate possible liver and kidney injuries following any systemic exposure to D-D.

In case of skin contamination, flush immediately with large amounts of water. Remove clothing immediately and wash skin and hair with mild soap and water. Treat skin irritation as any other serious chemical burn. Except in cases of massive exposure with large areas of skin injury, primary treatment with topical corticosteroid preparations should be considered. As is the case with all other chemical

burns, skin injury due to D-D may take longer to heal than do thermal burns.

In event of eye contamination with D-D, the immediate and thorough lavage of the affected eye is of paramount importance. Topical anesthetics, steroids and antibiotics may be indicated. All but the most minor eye exposures should be referred to an ophthalmologist for evaluation and treatment.

Intoxication Following Continued
Exposure to Low Levels of D-D

There is no human experience to indicate that it occurs, but the possibility could be considered that continued exposure to low concentrations of D-D may result in symptoms of central nervous system depression. Termination of exposure should result in prompt and complete recovery.

Animals repeatedly exposed to D-D showed hepatic and renal damage.

MEDICAL INFORMATION

Physicians should direct requests for additional medical information to:

M. B. Slomka, Ph.D., M. D., Medical Director
Shell Chemical Company
2401 Crow Canyon Road
San Ramon, California 94583
Telephone: (415) 837-1531

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[Trial Exhibit 1123]

[Shell logo omitted]

SHELL CHEMICAL COMPANY
2401 Crow Canyon Road
San Ramon, Ca. 94583

AN OUTLINE OF GENERAL GUIDELINES FOR D-D® SOIL FUMIGANT BULK INSTALLATIONS

D-D® HANDLING AND SAFETY MANUAL

December, 1981

JA-570

AN OUTLINE OF GENERAL GUIDELINES FOR D-D® SOIL FUMIGANT BULK INSTALLATIONS

The following outline has been prepared to give Shell customers an overview of the major features of the D-D® Soil Fumigant Handling and Safety Manual, but it must not be considered a substitute for the manual. All customers must become thoroughly familiar with the entire manual to assure proper handling. Furthermore, while the information contained in this outline and in the Safety Manual itself is believed reliable and is supplied in good faith, Shell Chemical Company does not warrant that the information is suitable for any given customer's particular purposes; each customer should assess his own needs with the aid of a qualified engineer to determine his proper course of conduct. Furthermore, although references are made to a variety of codes, the customer is urged to make direct reference to all applicable local, state, NFPA, UL, OSHA, etc. laws and codes since it is his responsibility for compliance with the law. Shell specifically disclaims any liability for injury or loss attributable to customer's non-compliance with these or any other applicable laws.

I. SAFETY

A. Product Information - Section 1A.

B. Safety Precautions - Section 1B.

1. Be certain all employees are trained in the proper handling techniques for D-D®, and that they observe all label precautions.
2. Arrange for your local Shell Representative to conduct a safety meeting for your employees.

3. Make certain that all employees have the required safety equipment available to them, and that the equipment is maintained in a clean, ready, condition.
4. Safety equipment recommended or required:
   (a) Respiratory Protection
   (b) Eye Protection
   (c) Body Protection
   (d) First Aid Kit
   (e) Eye Wash Facility
   (f) Safety Shower
   (g) Fire Extinguisher

C. Emergency Procedure
1. Be aware of what to do in case of a fire or spill.

II. STORAGE AND HANDLING

A. Tanks – Section IIB.
1. Reference UL 142, STEEL ABOVE-GROUND TANKS and API 650 WELDED STEEL TANKS FOR OIL STORAGE, APPENDIX J.
2. Tank must be in sound condition.
   (a) Normally carbon steel (mild steel, black iron, etc.).
   (b) Usually 0.250" thick.
3. Provide normal pressure/vacuum relief.
   (a) Conservation vent valves recommended.
   (b) Flame arrestor vents legal, but less desirable.
   (c) Vents on tanks located adjacent to buildings or public way must be at least 12' above ground, 5' from

buildings.

4. Provide emergency pressure relief.
   (a) Self-closing manhole cover or adequate multi-purpose gauge hatch are practical substitutes for emergency vent devices.
   (b) Frangible jointed roof is an alternative emergency vent for vertical tanks over 10' in diameter only.

B. Installation of Tank - Section IIB.
   1. Reference NFPA 30, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE.
   2. Tank should be placed on a firm foundation, Reference API 650, WELDED STEEL TANKS FOR OIL STORAGE APPENDIX B-1.
   3. Bonding and Grounding, Reference NFPA 77 STATIC ELECTRICITY.
      (a) Tank, piping and pumps should be positively grounded.
      (b) Any container being loaded or unloaded should be grounded prior to and throughout the entire filling operation.
   4. Manhole for inspection clean-out and repair should be provided all tanks and compartments over 5,000 gallons.

C. Spill Containment Required - Section IIB.
   1. Reference NFPA 30, FLAMMABLE & COMBUSTIBLE LIQUIDS CODE.
   2. Contain spills by diking or remote impoundment.
      (a) Formed cement is the primary and most desirable dike construction material.

(b) Concrete block dike requires sealing to reduce porosity so consequently is not a preferred choice.

3. Dikes volumetric capacity shall not be less than the greatest amount of liquid released from the largest tank assuming it is full.
4. Dike must be at least 5' from the tank and at least 10' from the property line.
5. Remote impoundment area must be lined and at least 50' from the property line and other tanks.

D. A Gauging Device is Useful to Prevent Overfilling.

1. A non-sparking calibrated stick is the simplest gauge.
2. Gauge tape is practical for large aboveground tanks.
3. Bubble or float gauges can provide remote reading.
4. Sight Tube (a poor but acceptable alternate).
   (a) Tube material must not be attacked by tank contents or the natural environment (sunlight).
   (b) Fire-safe valve at lower end, closed and locked when not in active use.

E. Moisture Controls – Section IIB-2, IIB-3.

1. Recommended but not required. Dried air and resultant dry fumigant reduces the corrosive potential to the bulk tank and enhances the product quality.
   (a) Desiccant type (calcium chloride) dryer on the in-breathing side excludes moisture.
   (b) Nitrogen blanketing excludes moisture

and also reduces possibility of fire or explosion because of oxygen exclusion.

F. Primary Valves, Piping and Accessories.
   1. All primary valves shall be of a fire-safe design. Primary valves are those valves immediately adjacent to the tank. For security purposes, primary valve should generally be locked closed except when in active service.
      (a) Gate valves of steel or nodular iron are most common but certain UL-approved ball valves may be used.
   2. Piping and fittings to be made of seamless or electrical resistance welded steel or stainless steel.
      (a) Use Teflon tape rather than pipe dope to seal threaded fittings.
   3. Hoses, couplings, filter and meter constructed of non-reactive materials. See Section IIB, HANDLING AND SAFETY MANUAL.

G. Pumps – Section IIB.
   1. Centrifugal pump recommended where suction head available.
   2. Electrical installation should conform to NFPA 70, NATIONAL ELECTRIC CODE, for Class 1 Group D, Division 1 and 2, Hazardous Locations.
   3. Gasoline engines can ignite flammable atmospheres and should only be used if they conform with NFPA 385, RECOMMENDED REGULATORY STANDARD FOR TANK VEHICLES FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.

H. Miscellaneous Information.

1. Commercial carriers usually deliver through a 3" cam-lock female fitting. If your pump has sufficient capacity you can use it to off-load the carrier and in so doing the carrier's hose will be drained. If the carrier's pump is used, the hose between the pump and your tank will remain full and must be drained back into the truck or other suitable container.
2. Cargo tanks or portable tanks (nurse rigs) should have PTO pumps, if possible, for loading and off-loading. If gasoline engine-driven pumps are used, they must conform to the severe restrictions of NFPA 385, RECOMMENDED REGULATORY STANDARDS FOR TANK VEHICLES FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.
3. Provisions for a vapor recovery system must be installed on tanks. However, commercial carriers are not equipped for hook-up at this time.

JA-576

USEFUL LITERATURE RELATED TO CONSTRUCTION & INSTALLATION OF ABOVE-GROUND STORAGE VESSELS FOR FLAMMABLE LIQUIDS

ITEM	TITLE
*NFPA 30	FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE 1977
NFPA 70	NATIONAL ELECTRIC CODE
NFPA 77	STATIC ELECTRICITY
NFPA 395	STANDARDS FOR THE STORAGE OF FLAMMABLE AND COMBUSTIBLE LIQUIDS ON FARMS AND ISOLATED CONTRUCTION PROJECTS.
NFPA 385	RECOMMENDED REGULATORY STANDARDS FOR TANK VEHICLES FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS

SOURCE:
NATIONAL FIRE PROTECTION
ASSOCIATION PUBLICATIONS
SALES DEPARTMENT
BATTERYMARCH PARK
QUINCY, MASSACHUSETTS 02269
(617) 328-9290 (They will bill)

UL 844 ($5.00)	ELECTRIC LIGHTING FIXTURES FOR USE IN HAZARDOUS LOCATIONS

UL 525 ($4.50)	FLAME ARRESTORS FOR USE ON VENTS OF STORAGE TANKS FOR PETROLEUM OIL & GASOLINE
UL 180 ($4.50)	GAUGES, LIQUID-LEVEL INDICATING AND TANK FILLING SIGNALS FOR PETROLEUM PRODUCTS
UL 142 ($5.00)	ABOVE-GROUND STEEL TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.
UL 842 ($4.50)	VALVES FOR FLAMMABLE FLUIDS

SOURCE:
UNDERWRITERS LABORATORIES, INC.
1655 SCOTT BLVD.
SANTA CLARA, CA. 95050
(408) 985-2400
(Send check with order – add 25% to cover cost of postage and handling)

API STANDARD 620	RECOMMENDED RULES AND DESIGN FOR CONSTRUCTION OF LARGE, WELDED, LOW PRESSURE STORAGE TANK
*API STANDARD 650	WELDED STEEL TANKS FOR OIL STORAGE

SOURCE:
AMERICAN PETROLUEM INSTITUTE
PUBLICATIONS AND DISTRIBUTION SECTION
2101 L STREET NORTHWEST
WASHINGTON, D.C. 20037
(They will bill)
*MOST USEFUL PUBLICATIONS

JA-579

[Trial Exhibit 1127]

D-D® SOIL FUMIGANT INSPECTION SUMMARY BROWN & BRYANT

* * *

Date: 7/16/79 - 7/17/79

D-D SOIL FUMIGANT BULK HANDLING FACILITY SURVEY

Company: Brown & Bryant Location: Arvin, California
Host representatives: Jack Brown
Shell representatives: Bob Swain

(Y) indicates yes. (N) indicates no.
Ref: indicates location in the Handling & Safety Manual.

Ref: (Y) Handling & Safety Manual available.

SAFETY EQUIPMENT FOR PERSONNEL

I-B Respiratory Protection:
(Y) Self-contained one on premises
(N) Full-face respirator
(N) Half-face respirator
(N) Cartridge/cannister replace NH_3 only
(Y) Other NH_3 only, cartridge type – dust respirators available to employees.

I-B Eye Protection:

(Y) Chemical worker's goggles Occasionally worn

(N) Other

I-B Body Protection: (description of)

(N) Slicker suits

(N) Aprons

(N) Resistant coveralls

(Y) Foot covering

(Y) Gloves

(N) Heavy

(Y) Light-weight

Additional notes on safety dress:

SAFETY EQUIPMENT IN OPERATION AREA

II-B Eye Wash:

(Y) Fixed station - 150'-200' near warehouse

(N) Portable type:

II-B Safety showers:

(Y) Fixed station (same as above)

(N) "Portable" wash--Describe:

II-B Fire extinguishing: City water piped into plant

(Y) Water - hose/hydrant size:

1-1/2 Hose - 2" line 75' away

1-1/2 Hose - 2" line 25' away

(N) Water - hose/tank size: capacity

(Y) Extinguishers Size: 1-25# ABC

type: Dry Chemical 150' away

Number within 50' of operations:

5# ABC in each vehicle

II-B (N) Locations of above well marked.

(Y) Free access to above?

Additional notes on safety equipment:

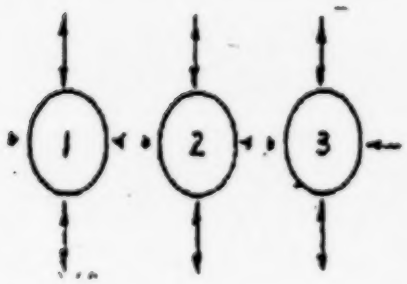
II-B TANKAGE

Tank #	Dia(ft)	length(ft)	Gallons	Horiz. or Vert.
#1	14'	18 - 20'	20,000	X

II-B Construction

Tank #	Material & Thickness		Press. Rating	Code	Stamp
#1	Steel	?	Atmos.	N	N

II-B Location (per NFPA 30)



with respect to
-Property lines
-Roads & easements
-Adjacent tanks
-Buildings
300-400' set back from nearest resident

Foundation

II-B Type Gravel
Fig. II-B (N) Tank anchoring provisions
& II B4

Access
(N) Stairs
(N) Ladder
(N) Platforms
(N) Guard rails

Fig. II Spill Containment Provisions
-B1 &
II-B4 (N) Diking-Height:
Dimensions:
Tanks with common dike:

* (N) Controlled run-off to:

(N) Sewers, ditches and streams protected?

* Property is graded to a sump where any drainage will either evaporate or percolate into the soil. If run-off is heavy, drainage will follow natural drainage off the property. WQCD have requested that an impoundment basin with impervious lining be installed to collect all drainage. B&B are planning to proceed with this request. The water table is 385'.

JA-583

[Trial Exhibit 1199]

INVOICE ORIGINAL

[Shell logo omitted]

* * *

CONDITIONS OF SALE

* * *

3. DELIVERIES Unless otherwise provided, deliveries of each Product shall be made (a) only at Buyer's plant at each Delivery Destination specified for such Product; (b) only if Seller has received Buyer's order reasonably in advance of the day which Buyer desires each delivery to be made; and (c) except at Seller's option only in minimum delivery quantity not less than the minimum specified. Seller may deliver any Product in any delivery equipment by any means of transportation and from any shipping point that Seller may select; and to any delivery by railroad, delivery at Buyer's plant at Destination means railroad's siding designated by Buyer or, absent such designation, at railroad's delivery point nearest such Destination. The quantity or weight of each delivery by rail car or bulk truck shall be determined on the basis of outage tables with appropriate corrections for temperature or weighmaster's certificate (as the case may be). Buyer shall furnish and maintain facilities for receiving and storing all Products delivered which are safe, adequate, and in compliance with all applicable governmental regulations, and shall unload each delivery promptly and at buyer's own risk and expense (including any demurrage due to delay in unloading).

* * *

[Trial Exhibit 1414]

PAYMENTS FOR THE ACCOUNT OF SHELL CHEMICAL COMPANY

REFERENCE NO.	INVOICE NO.	INVOICE DATE	DISCOUNT	AMOUNT
05-06-001-01 OR REQUEST				2,405.20
PAYMENT FOR DD FACILITIES IMPROVEMENT PROGRAM BASED ON FIRST QUARTER 1983 PURCHASES				
				[Handwritten note omitted]
NG	8 78550 01	620729	5362	2,405.20
[illegible] CODE	VENDOR NO.	CHECK NO.	BANK I.D.	AMOUNT OF CHECK

[logo omitted]
DATE
05-09-83
PAY****2,405 DOLLARS 20 CENTS ****2,405.20
TO THE ORDER OF CHECK NO. 620729
BROWN AND BRYANT INC
P.O. BIN T
SHAFTER, CA 93263

BANK OF OKLAHOMA /s/D.E. Cannon
TULSA, OKLAHOMA TREASURER

6:207 29 :103900036: 206149442

[Handwritten:] Will pay for valves & hose needed for July 1 ruling that BB has to empty DD trucks – (not the driver) Trucks will be fitted with 3" valves. BB has to have pump.

JA-585

[Trial Exhibits 1464A and G-9]

REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT

(First Operable Unit - Source Control)

BROWN & BRYANT SUPERFUND SITE

Arvin, California

Prepared by
U.S. Environmental Protection Agency
Region IX

May 28, 1993

[EPA logo omitted]

ORGANIZATION OF REPORT

This document is the combined Remedial Investigation (RI) report and the Feasibility Study (FS) report for the first operable unit at the Brown & Bryant site in Arvin, California. The RI/FS reports address the surface soils, the vadose zone soils to the first groundwater and the first groundwater. The reports were written to be stand alone, therefore neither the table of contents nor the executive summary for either report has been combined. The order of this document is the RI table of contents, the RI executive summary, the RI report, the FS table of contents, the FS executive summary, the FS, a combined reference section and finally, the FS appendix. The RI appendices are in a separate document.

BROWN & BRYANT
REMEDIAL INVESTIGATION REPORT
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[Trial Exhibit G-9]

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EXECUTIVE SUMMARY

This report presents the findings of a Remedial Investigation (RI) conducted for the Brown & Bryant (B&B) Superfund Site in Arvin, California. The investigation focused on the surface soil, subsurface soil to the first water bearing unit (the A-zone soils), and the first water bearing unit located approximately 65 to 70 feet below ground surface (A-zone groundwater). The soil below the A-zone groundwater (the B-zone soils) and the second water bearing unit (B-zone groundwater) were also investigated to a limited extent during this RI; however, these areas will be fully addressed as part of a second operable unit RI.

B&B was a pesticide reformulator and custom applicator facility from 1960 to 1989. The facility is approximately 5 acres located at 600 South Derby Road in Arvin, California. Arvin is an agriculture community with a population of approximately 9,300 people. The site is located in light industrial and commercial area, with a residential area located across the street.

Contamination of soil and groundwater resulted primarily from poor housekeeping, spills, and leaks from a surface pond and sumps. In 1981, the facility was licensed under RCRA as a hazardous waste transporter.

Investigations at the site began in 1983 when the State required B&B to conduct site investigations and dispose of contaminated soil. In 1989, the site was listed on the National Priorities List of superfund sites. In 1990, EPA conducted an emergency response site assessment and began the RI.

The field investigation for the RI consisted of the following main activities: surface and subsurface soil sampling events; the installation of seventeen monitoring wells, thirteen of these were installed by the Potentially Responsible Parties as part of an Unilateral Administrative Order; and five rounds of groundwater sampling. A total of twenty A-zone groundwater wells, seven B-zone groundwater wells and two City wells were sampled during the RI. Fifty-seven soil borings were drilled by EPA and thirty-nine surface soil samples were collected. Soil and groundwater samples were analyzed for a wide array of pesticides and herbicides, volatile and semivolatile organic chemicals, and metals. Tests were also performed to characterize the physical properties of the soil and to characterize general groundwater quality.

The geology at the site is an alluvial deposit of alternating layers and mixtures of unconsolidated sands, silts and clay. The stratigraphy is very heterogeneous and layers tend to be discontinuous. The site geology has been divided into two zones. The A-zone includes unsaturated soil to 65 to 75 feet below ground surface (bgs) and includes the first water bearing unit, the A-zone groundwater. The base of the A-zone is a thin sandy clay layer from 75 to 85 feet bgs. The clay layer and the A-zone groundwater occur under the entire site but disappear within 900 feet

south of the site. The B-zone includes unsaturated soil below the A-zone and the second water bearing unit or the B-zone groundwater at 150 to 155 feet bgs. The B-zone extends to at least 250 feet bgs and ends at a clay layer known as the Corcoran Clay which confines the drinking water aquifer below it. The thickness of this clay later at the site is unknown.

Groundwater in the A-zone flows in a generally southern direction, with some mounding of the water table observed from the southwest corner of the site extending south. Water levels measured during the RI have shown a steady decline in the water table, probably as a result of the long drought in California. The saturated thickness of the A-zone groundwater is from 0 to 10 feet. The hydraulic conductivity in this zone was measure at low levels of 10^{-4} to 10^{-6} cm/s, and from a slug test the groundwater velocity was estimated at 53 feet/year. Extraction of contaminated A-zone groundwater for site remediation is expected to be difficult due to its low permeability and thinness. Slug test results suggest that a yield of less than 100 gallons per day can be expected for wells in this groundwater.

The B-zone groundwater is actually composed of a series of water bearing units. All of the new wells in the B-zone were installed in the B-2 water bearing unit, located at approximately 170 feet bgs. The direction of flow in this unit is to the south, and the gradient is very flat (0.0004). Permeabilities are much higher than for the A-zone groundwater. The pump test indicted that wells could be pumped at 7 gpm for an extended period.

Sampling results for surface soils and construction zone (to 7 feet bgs) identified dinoseb as the only

contaminant of concern. Dinoseb was detected at over 7,000,000 ug/kg. The principal hot spot of dinoseb contamination occurs in the location of a former spill, along the east fence-line. High concentrations of dinoseb in surface soils were also found scattered in three other locations on-site and low concentrations were found over much of the site. Within the construction zone for the site, the spill area was the only location where high concentrations of dinoseb were found.

Soil contamination down to the A-zone groundwater was found over much of the site, but was primarily concentrated in three areas: the sump and wash pad area, the dinoseb spill area, and the pond and the large storage tank in the southwest corner of the site. Within these three areas and over the entire site, six chemicals were identified as occurring at highest concentrations and to the greatest extent within the A-zone soils. These chemicals are 1,2-dicloropropane, 1,3-dicloropropane, dibromochloropropane, 1,2,3-trichloropropane, ethylene dibromide, and dinoseb. All of these chemicals except for dinoseb are volatile organic chemicals.

Dinoseb was found concentrated in the top 30 feet of the spill area and then declined significantly in concentration down to the A-zone groundwater. In the pond and sump areas, the concentrations were significantly less than in the spill area.

Volatile organic contaminants were found in highest concentrations in the sump and wash pad area. One boring in particular, boring I (located in the center of the sump), strands out for its exceptionally high concentrations. These contaminants were also found at significant levels in the area of the pond, and then were

found in only relatively small concentrations elsewhere at the site. In the sump and was pad area, concentrations were highest from 20 and 30 ft bgs, but were also found at concentrations greater than 1,000 ug/kg over most of the A-zone within this area. 1,2-DCP was the volatile contaminant found at highest concentrations, followed by DBCP, TCP, EDB, and 1,3-DCP. In the area of the pond, concentrations were highest from 30 to 40 ft bgs, but in general were found fairly evenly distributed over the A-zone. From highest to lowest, the contaminants in the pond area were the same as in the sump and wash pad area.

Within the A-zone groundwater the same six chemicals plus chloroform were found in highest concentrations and were most widely distributed. The reservoir of contamination in the A-zone groundwater appears to be significantly larger than any other contaminated media at the site. Concentrations for each of the seven contaminants, except for 1,3-DCP, were found at levels as high as 1,000 to 100,000 ug/1. The highest concentrations were consistently observed in well AMW-2P, located near the sump, and at well WA-5, which is directly west of the sump, and at wells AMW-1P, EPAS-2 and EPAS-3, which are all located near the pond. The distribution of contaminants was consistent with the locations of the major sources areas and follow a pattern consistent with the groundwater flow in the A-zone. In general, contamination was observed at slightly higher levels at wells near the pond when compared with wells near the sump; 1,2-DCP was a notable exception.

* * *

* * *

[Exhibit 1464A]

SECTION 4: NATURE AND EXTENT OF CONTAMINATION

This section presents the results of field investigations conducted during the RI/FS that provided data on the nature and extent of contamination in the media of concern at the site. Presented below are the findings for surface soils, subsurface soils, and groundwater units sampled during the RI/FS. For each media specific section below, only the results of sampling conducted by EPA or its contractor are presented. The data collected by the PRPs' contractor, Kennedy/Jenks (K/J), is outside of the scope of this RI/FS and is not presented here.

For each media discussed below, all chemicals that were detected during the RI/FS are listed along with the highest detected result in each media. These lists of chemicals are then screened to identify the most important contaminants for determining the extent of contamination. In all cases, the extent of contamination is only discussed for those chemicals that were detected at greater than 5% frequency; in some cases, this list is further screened using existing health-based action levels or for other reasons discussed below that suggest that the chemical is not a significant contamination threat. The intent is to focus only on those chemicals that will be determining factors in selecting and specifying the site remediation, which is discussed in the Feasibility Study.

4.1 Source Areas

Historical sources of contamination at the site have all been removed with the closure of the site in the late

1980s. Based on the facility operations history (see section 1.2.2) the primary historical source areas are the tank area in the center of the site, the wash pad and sump area just south of the tanks, the dinoseb storage area where a spill occurred (along the east fence line), the waste pond, and the area between the pond and the large storage tank (see Figure 1.3). Of these areas, all have shown significant levels of contamination in the surface and/or subsurface soils except for the tank area in the center of the site.

These historical source areas have in the past served as points for potential direct exposure to contamination and sources of groundwater contamination. Despite clean-up actions taken to date (see section 1), contamination remains within the vadose zone and continues to pose a potential threat to groundwater quality, and contamination remains in the surface soil and poses potential risks from direct exposure. In addition to these soil source areas, the A-zone groundwater is highly contaminated and appears to be the most significant and largest reservoir of remaining contamination in any portion of the site. The A-zone groundwater contamination as well as the soils contamination are described and discussed in detail in the sections below.

[Trial Exhibit G-9]

Aside from the above more significant source areas for site contamination, contamination is also found distributed over much of the site at lower concentrations.

4.2 Surface Soil Contamination

To examine the nature and extent of contamination in surface soils, data was compiled from fifty surface

soil samples and 191 sample analyses (see section 2 and Figure 2.3). (For the purpose of identifying chemicals of potential concern in surface soils, only the results of the surface soil samples collected with a trowel from the top one foot were used. To determine the extent of contamination for the chemicals of potential concern, soil boring data from the surface were also used. A total of seven organic compounds were detected in surface soils during the RI/FS, including three volatile organic compounds, three semivolatile organic compounds, and dinoseb (all hits in surface soil samples are included in Appendix F). The chemicals are listed in Table 4.1; for each chemical the total number of hits, the frequency of detection, and the highest result detected are also presented. Of the seven organic chemicals detected, four chemicals were detected at a greater than 5% frequency, and of these four chemicals, only dinoseb is a chemical of concern for risk assessment (see section 6.1). The extent of dinoseb contamination is discussed below in section 4.2.1.

Based on historical data for the chemical used at B&B, metals have not been considered a likely contamination threat, and this was found to be true with respect to surface soils. During the RI/FS, a total of nineteen samples were analyzed for a routine list of hazardous and nonhazardous metals. Table 4.2 summarizes the results of these analyses. The table includes a list of all metals detected in subsurface soils, and, for each metal detected, the highest and average concentrations and the frequency of detection are also presented. Average concentrations are provided for both on-site samples and background samples (two background samples were collected from location SS06). No significant difference were observed

between the background and on-site averages; the difference between the two averages is always less than an order of magnitude and in many cases the differences are significantly smaller. In fact, the background average is frequently higher than the on-site average. Based on this data, no further evaluation of the metals results in surface soils is provided.

4.2.1 Extent of Dinoseb Contamination in Surface Soils

Dinoseb is found throughout the site and is more widely distributed in soil than any other site contaminant. Dinoseb was detected in thirty surface soils samples and eighteen soil boring samples taken from the surface. Table 4.3 lists all the results for surface soil and soil boring samples for dinoseb within the top foot of soil, and Figure 4.1 includes all these locations. A total of twenty-one samples from the top one foot were non-detect for dinoseb, and the detection frequency for dinoseb in surface soil samples was 70%.

A health-based clean-up level for dinoseb in surface soils has been established at 80 mg/kg (see the FS Report). Eight surface soil sample locations had detected dinoseb concentrations greater than 80 mg/kg. The eight sample locations are surface soil samples 23, 105, 106, 110, 411, and soil boring locations C, U and X (see Figure 4.1). From these samples, four areas for potential clean-up are identified: the dinoseb spill area along the east fence line (which had the highest dinoseb concentration on-site of 7,400 mg/kg), the northeast corner of the site, a second location along the east fence line (at location 105), and an area to the east of the large storage tank (at location 110). To further identify areas for potential clean-up, Figure 4.1 also identifies the locations of eight other samples with

concentrations of dinoseb between 8 mg/kg and 80 mg/kg. These samples are in the same general locations as the samples with results above 80 mg/kg.

Based on the data collected, it is difficult to determine the exact extent of each area exceeding the clean-up level. Table 4.3 segregates the dinoseb results for each of the four areas identified above and includes the average and standard deviation for the results from three of these areas and for the site overall. In general it appears that there are isolated hot spots with concentrations in excess of 80 mg/kg. In three of the four areas with concentrations in excess of 80 mg/kg, only one sample in each area had concentrations above this level. In the dinoseb spill area, five locations were above 80 mg/kg.

The extent of dinoseb contamination from 1 to 7 feet bgs was also investigated. Seven feet is the extent of a possible construction zone and is based on sewer line data from the city of Arvin. The risk from construction worker exposure to contamination in this zone was evaluated in section 6. Dinoseb was the only contaminant of concern in this depth interval, and only two samples from one soil boring location were detected at concentrations of dinoseb greater than 80 mg/kg. These samples were from soil boring C at 2 feet bgs (4,300 mg/kg) and 5 feet bgs (5,800 mg/kg). Soil boring C is located in the dinoseb spill area.

* * *

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA

THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al.,	)	No. CV-F-92-5068 OWW/DLB
Plaintiffs,	)	CONSOLIDATED ARVIN CASES
	)	RAILROADS' PROPOSED FINDINGS OF FACT
vs.	)	
BROWN & BRYANT., INC., et al.,	)	TRIAL DATE: March 30 - May 14, 1999
Defendants.	)	

* * *

E. Divisibility

Introductory Comment. It is well settled that where there are distinct harms or a single harm capable of being reasonably apportioned among multiple causes, liability is several and not joint. See, e.g., Restatement (2d) of Torts, § 433A; In re Bell Petroleum Services, Inc., 3 F.3d 889, 895 (5th Cir. 1993).

In this case, any harm caused by releases on the RR Property are a separate harm from the soil contamination on the B&B Property and the groundwater contamination because: (1) the reported releases have not traveled to the groundwater; (2) even

if they did communicate to the groundwater, such communication was insufficient to have caused the incurrence of response costs; and (3) in the event some harm to the groundwater is proven, such harm is reasonably capable of apportionment on the basis of relative mass. See, e.g., United States v. Dico, Inc., 136 F.3d 572 (8th Cir. 1998); United States v. Alcan Aluminum Corp., 990 F.2d 711, 722 (2d Cir. 1993).

98. The Railroads' liability for releases from the Railroad Property is divisible if the contribution to the environmental harm and the associated response costs is separate from, or reasonably apportionable from, the contribution from the B&B Property.

99. The Railroads' expert Dr. Thomas Kalinowski, an environmental scientist experienced in the field of site characterization and remediation, testified to an appropriate algorithm for apportioning the parties' respective response costs between the two parcels. The Government disputes the Railroads' divisibility theory as a matter of law -- primarily on the grounds, rejected by this Court in its earlier rulings on summary judgment, that the entire site should be treated as a single facility -- but did not rebut or criticize Dr. Kalinowski's methodologies. [See Chirlin, 1751:10-1752:23]

100. With respect to future groundwater remediation, the cost of extracting and treating the groundwater using the granulated activated carbon (GAC) system envisioned by the EPA may be divided between the RR Property and the B&B Property according to the ratio of the mass of contamination in the A-zone groundwater attributable to releases from each of the parcels to the total mass of contamination in the groundwater. The total mass of contamination dissolved in the groundwater and/or adsorbed to the

vadose zone soil is approximately 557 kg. [Kalinowski, 3452:19-3453:7; 3481:8-3494:23; Ex. 3032]

Comment. (1) The total mass of contaminants in the groundwater is actually higher, because Dr. Kalinowski did not calculate the amount of DNAPL present. Kalinowski, 3490:23- 3491:11. According to Dr. Kueper, at least 1800 gallons of DNAPL are in the A-zone. [Kueper, 3837:3-3839:14; 3854:5-12, 3862:15-22]

(2) The Government did not put in any estimate of the amount of groundwater contamination, if any, caused by releases from the RR Property. Dr. Kalinowski and Dr. Stephens both testified that in their opinion, the amount of such contribution is zero. [Kalinowski, 3496:9-22; Stephens, 3691:12-19, 3671:3-7] The Railroads urge the Court similarly to find that their percentage share of future groundwater remedial costs is zero. However, in the event that the Court concludes there is sufficient evidence to hold the Railroads liable for some portion of such costs, the Railroads' apportionable share should be determined by Dr. Kalinowski's formula.

101. The Government's past response costs are similarly divisible between those costs reasonably related to the investigation of actual or potential releases on the RR Property, and those costs related to the B&B Property:

(i) Costs incurred in connection with the TAT drilling and sampling effort through December, 1990 are reasonably apportionable on the basis of the ratio of the number of borings (7) drilled on the RR Property to the total number of borings (41) drilled on the site. This calculation results in the allocation of $489,000 of response costs to the Railroads. (See Ex. 3032.)

(ii) The response effort in 1991 through August, 1992 consisted primarily of Kennedy/Jenks' work, on

behalf of the Railroads, in response to the EPA's Administrative Order 91-6, and of the soil treatment efforts of EPA's contractor Roy F. Weston on the B&B Property. Those costs are discussed in section III-D-1, below.

(iii) During the period September, 1992 through May 1993, EPA incurred approximately $1.13 million in costs in connection with its preparation of the RI/FS. By that time, EPA had available to it extensive data indicating that the reported soil contamination on the RR Property did not require remediation, and that there were no measurable sources of groundwater contamination on the RR Property. Those costs are, therefore, apportionable solely to the B&B Property. [Ex. 3016-B; Kalinowski, 3519:17-3527:12]

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF CALIFORNIA
HON. OLIVER W. WANGER

UNITED STATES OF AMERICA and DEPARTMENT OF TOXIC SUBSTANCES CONTROL OF THE STATE OF CALIFORNIA, Plaintiffs, vs. THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY, et al., Defendants.	No. CIV-F-92-5068 OWW MOTION TO AMEND FINDINGS OF FACT

FRESNO, CALIFORNIA — MONDAY, JANUARY 27, 2003

REPORTER'S TRANSCRIPT OF PROCEEDINGS

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[16]

Thank you, your Honor.

THE COURT: All right. Well, you can comment on my view because you know what it is, but we might as well discuss it eyeball to eyeball.

It seems to me that we know that there was storage, that they washed the warehouse, that they washed rigs. They rinsed out containers when D-D was being delivered in containers. We don't have the

specific evidence that it was being stacked there, but we do have anecdotal evidence from people that there were tipped cans and they had the tops off or they had the hoses in them that were used to basically transfer the product, and all that was on the railroad property.

And we have this huge battle about the culvert, and I mean there is no dispute there was an 8-inch pipe through the, if you will, the berm under the railroad track to get any drainage that was building up on the railroad side to the pond and sump in the southeast corner of the property.

And so what it seems to me is that, by contrast, you have loading, formulating, tremendous activities, I'm not going to detail every one of them, that a lot of products that Shell didn't deliver, didn't have anything to do with that are going on at not only the warehouse, but all of thc all of the different facilities, the storage tanks, the loading docks, the wash pads, all that that was at the Brown & Bryant [17] parcel, which was 80 percent of the surface area of the site.

But the difference in activities, I think 80 percent would be an understatement of what's going on day in and day out in terms of the spilling, the washing, the introduction of water. And the evidence the Court believes showed that there was simply less washing, less surface water that was nonprecipitation introduced to the railroad parcel than there was to the Brown & Bryant site.

Now, I agree with you, to me, the equity of that screams out and you can't ignore it, you can't stick someone for the whole site under those conditions. Their scorched earth approach, I mean I agree with you, it's a horrible thing to do to a judge. And I mean it's probably the worst thing any litigant has ever done

to me, and I had to work harder because of it, but I didn't penalize them for it. I did what I thought was right in accordance with the law and equity because we still have an allocation and equitable proceeding.

I mean they can, in good faith, believe what their experts said. I assume—but I think that their experts never dealt with the evidence of what was going on on the parcel. They just dealt with what they got in the random borings and the subsurface data, such as it was, that was available.

And so that's what I did. And that's why I did it.

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